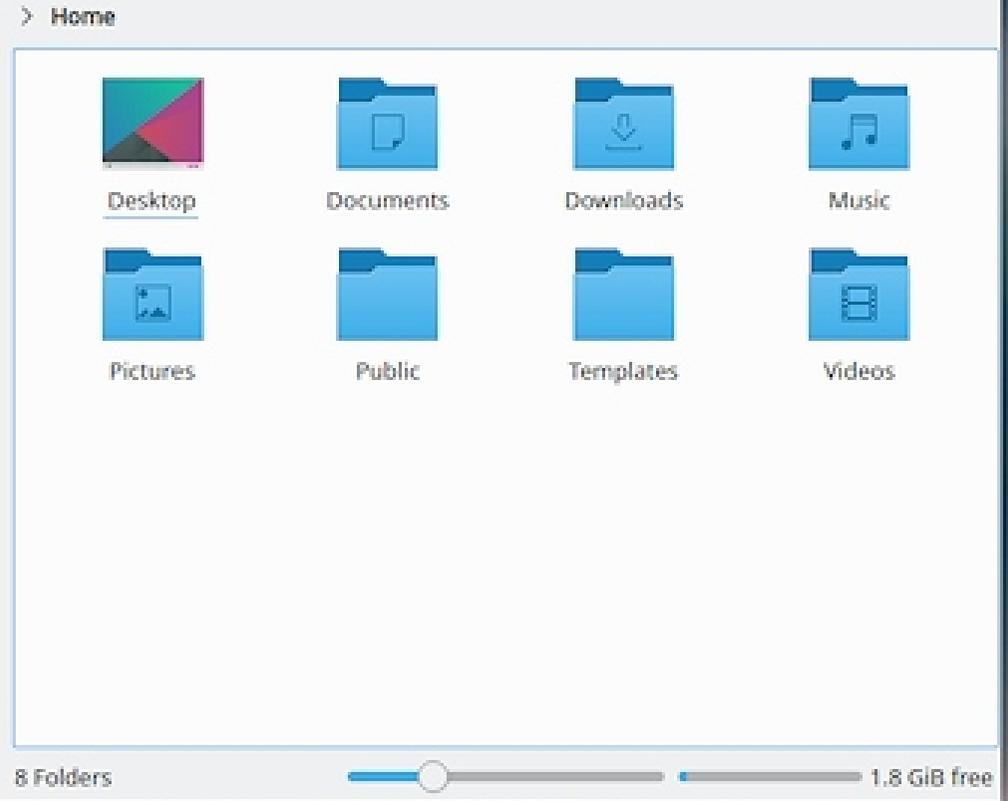
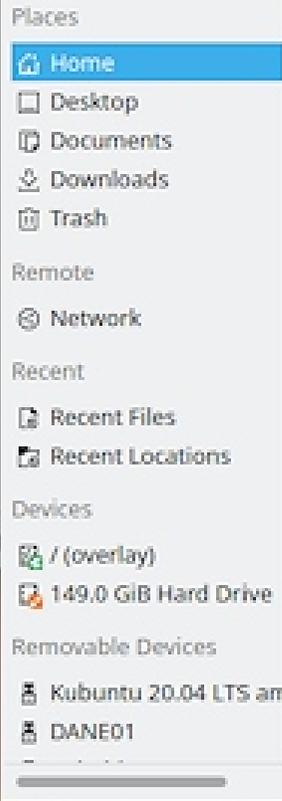
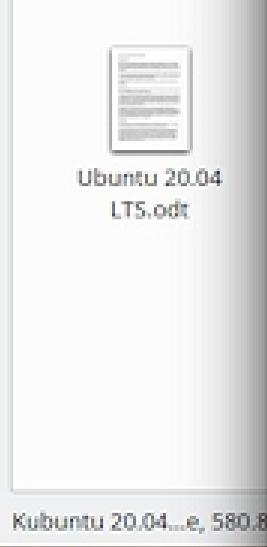
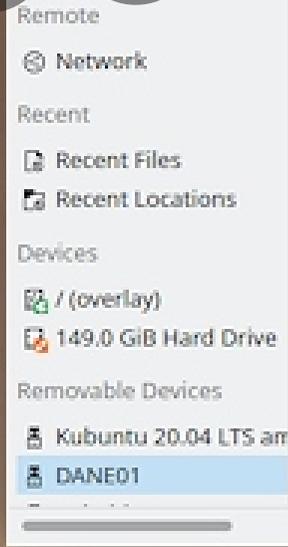




# Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #158 - June 2020



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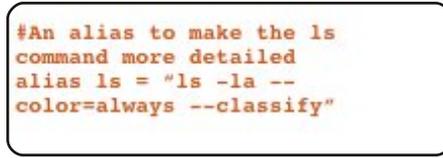
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# Full Circle

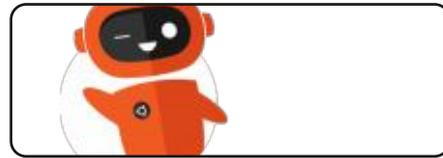
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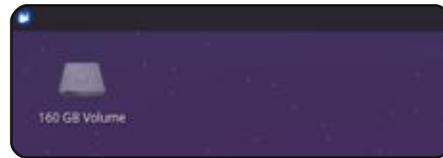
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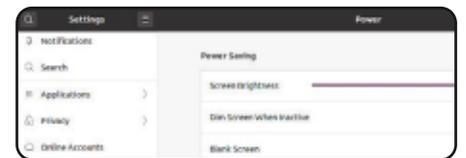
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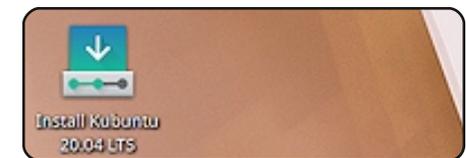
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## WELCOME TO THE LATEST ISSUE OF FULL CIRCLE

Once again, we have the usual suspects of Python, Inkscape, Krita and more Rawtherapee. To complete the HowTo trilogy we have a piece on putting Ubuntu (20.04) onto a 2-in-1 convertible laptop. You know the ones where it looks like a laptop, but you can fold the keyboard back to make it a tablet? Yeah, one of those. Did it work? Have a read and see.

Well, it seems that BSD has finally broken SJ. He's had enough of it and will, from next month, will revert back to his old Linux Loopback format. Hope fully, that will keep him sane.

Speaking of losing the plot, Richard has (it seems) finally had enough of Ubuntu 16.10 and (from this month) will be installing Ubuntu 20.04 and joining us in the real world. Welcome, Richard!

Last month we had reviews of Ubuntu, Lubuntu, and Ubuntu Budgie. To complete the family, we have reviews of Kubuntu and Xubuntu. Next month we'll have a review of a new kid on the block. One with a surprising twist. It's called Ubuntu Unity. Yes, that's right. It's a flavor of Ubuntu with the Unity desktop. It's not an official flavor yet, but apparently it uses the recent Ubports version of Unity (which was recently named Lomiri, so that confuses things even more).

Stay safe and well!

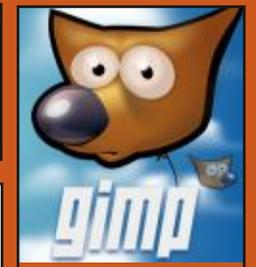
**All the best, and keep in touch!**

*Ronnie*

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## MX LINUX DISTRIBUTION

### RELEASE 19.2:

06/02/2020

**M**X Linux 19.2, created as a result of the collaboration of the communities formed around the antiX and MEPIS projects, has released a new version. The release is based on the Debian with improvements from the antiX project and numerous proprietary applications that make it easy to configure and install software. By default, the Xfce desktop is offered. Downloads are 32-bit and 64-bit builds, 1.5 GB in size (x86\_64, i386).

<https://mxlinux.org/blog/mx-19-2-now-available/>

## QUTEBROWSER 1.12.0 WEB

### BROWSER RELEASED:

06/01/2020

**Q**utebrowser 1.12.0, providing a minimal graphical interface that does not distract you from viewing the contents, and a

navigation keys in the style of Vim text editor, is out. The code is written in Python using PyQt5 and QtWebEngine. Sources are distributed under the GPLv3 license. The use of Python does not affect performance, since the rendering and analysis of content is carried out by the Blink engine and the Qt library.

The browser supports a tab system, download manager, private browsing mode, built-in PDF viewer (pdf.js), ad blocking system (at the host block level), and history. To watch YouTube videos, you can set up an external video player. You can move around the page using the "hjkl" keys, press "o" to open a new page, switch between the tabs using the "J" and "K" keys or the "Alt-tab number". When you press ":", a command prompt is displayed, in which you can search the page and execute typical commands, as in vim, for example, ": q" to exit and ": w" to save the page.

<https://github.com/qutebrowser/qutebrowser/releases/tag/v1.12.0>

## RELEASE OF GIT 2.27:

06/02/2020

**T**he distributed source control system Git 2.27.0 has a new version. Git is one of the most popular, reliable and high-performance version control systems, providing flexible non-linear development tools based on branch branching and merging. To ensure the integrity of the story and resistance to changes "retroactively", an implicit hashing of the entire previous history in each commit is used, it is also possible to digitally sign the developers of individual tags and commits.

Compared to the previous release, the new version adopted 537 changes, with the participation of 71 developers.

<https://lkml.org/lkml/2020/6/1/708>

## RELEASE OF THE DEVUAN 3, FORK OF DEBIAN WITHOUT SYSTEMD:

06/03/2020

**D**evuan 3.0 Beowulf, a fork of Debian GNU / Linux that ships without the systemd system manager was released. The new branch is notable for the transition to the Debian 10 "Buster" package base. Live-builds and installation iso-images for AMD64, i386 and ARM architectures (armel, armhf and arm64) are available for download. Devuan-specific packages can be downloaded from the packages.devuan.org repository .

As part of the project, forks of about 400 Debian packages were created, which were modified to get rid of systemd bindings, rebranding, or adapting to Devuan infrastructure features. Two packages (devuan-baseconf, jenkins-debian-glue-buildenv-devuan) are present only in Devuan and are related to the configuration of repositories and

the operation of the build system. Otherwise, Devuan is fully compatible with Debian and can be used for building specialized Debian builds without systemd.

<https://devuan.org/os/announce/beowulf-stable-announce-060120>

## TOR BROWSER 9.5

**AVAILABLE:**

06/03/2020

After six months of development, a major release of the specialized browser was announced, in which the development of functionality based on the Firefox 68 ESR branch was continued. The browser is focused on ensuring anonymity, security and privacy, all traffic is redirected only through the Tor network. It is impossible to access directly through a regular network connection, and does not allow tracking real IP's of users. (In case of a browser hack, attackers can gain access to the network system parameters, so products such as Whonix should be used to completely block possible leaks.) Tor Builds are available for Linux, Windows, macOS and Android.

<https://blog.torproject.org/new-release-tor-browser-95>

## TAILS 4.7 DISTRIBUTION

**RELEASED:**

06/03/2020

The new release of this specialized distribution (The Amnesic Incognito Live System), based on Debian and designed to provide anonymous access to the internet, is available. Anonymous exit to Tails is provided by the Tor system. All connections except traffic through the Tor network are blocked by default with a packet filter. Encryption is used to store user data in the save user data mode between starts. A Live ISO build is available for download.

[https://tails.boum.org/news/version\\_4.7/index.en.html](https://tails.boum.org/news/version_4.7/index.en.html)

## NEXTCLOUD HUB 19 COLLABORATION PLATFORM

**RELEASED:**

06/04/2020

The Nextcloud Hub 19 platform, which provides a self-sufficient solution for organizing collaboration between employees of enterprises and teams developing various projects, was released. This allows the cloud to expand support synchronization and data exchange, providing the ability to view and modify data from any device at any point in the network (or using WebDAV web-interface). Nextcloud server can be deployed on any host that supports the execution of PHP scripts and provides access to SQLite, MariaDB / MySQL or PostgreSQL. Nextcloud source code distributed under license AGPL.

<https://nextcloud.com/blog/nextcloud-hub-brings-productivity-to-home-office/>

## ELEMENTARY OS 5.1.5

**DISTRIBUTION UPDATE:**

06/04/2020

Elementary OS 5.1.5, positioned as a fast, open and privacy-conscious alternative to Windows and macOS, is out. The main focus of the project is on high-quality design, aimed at creating an easy-

to-use system that consumes minimal resources and ensures fast startup speed. The original components of Elementary OS are developed using GTK3, Vala, and its own Granite framework. The Ubuntu project is used as the basis of the distribution. At the package level and repository support, Elementary OS 5.1.x is compatible with Ubuntu 18.04. The graphical environment is based on Pantheon's own shell, which combines such components as the Gala window manager (based on LibMutter), the WingPanel top panel, Slingshot launcher, the Switchboard control panel, the Plank bottom taskbar (an analogue of the Docky panel rewritten to Vala) and the session manager Pantheon Greeter (based on LightDM).

<https://blog.elementary.io/hera-updates-for-may-2020/>

## STRATIS 2.1 RELEASED, LOCAL STORAGE MANAGEMENT TOOLKIT:

06/04/2020

After seven months of development, the Stratis

project, being developed by Red Hat and the Fedora community to unify and simplify the configuration and management of a pool of one or more local drives, was announced. Stratis provides features such as dynamic storage allocation, snapshots, integrity and layer creation for caching. The project code is written in Rust and distributed under the MPL 2.0 license.

The system emulates in many ways the advanced tools for managing ZFS and Btrfs partitions, but is implemented as a layer (the `stratisd` daemon) working on top of the Linux kernel-device-mapper subsystem (`dm-thin`, `dm-cache`, `dm-thinpool`, `dm-` modules are used `raid` and `dm-integrity`) and the XFS file system. Unlike ZFS and Btrfs, Stratis components work only in user space and do not require loading specific kernel modules. The project was initially presented as not requiring an expert on storage systems to administer the qualifications.

<https://github.com/stratis-storage/stratisd/releases/tag/v2.1.0>

## **FREENAS DEVELOPERS UNVEILED LINUX-BASED TRUENAS SCALE**

### **DISTRIBUTION:**

06/04/2020

iXsystems, which is developing the distribution kit for the rapid deployment of FreeNAS and the commercial TrueNAS products based on it, has announced the start of work on the new open project TrueNAS SCALE. A feature of TrueNAS SCALE was the use of the Linux kernel and the Debian 11 (Testing) package base, while all of the company's previously released products, including TrueOS (formerly PC-BSD), were based on FreeBSD.

The purpose of creating a new distribution, is for expanding scalability, simplifying infrastructure management, using Linux containers and focusing on creating software-defined infrastructures. Like FreeNAS, TrueNAS SCALE relies on the ZFS file system implemented by the OpenZFS project (ZFS On Linux is offered as the standard ZFS implementation). TrueNAS SCALE will also use tools developed by

iXsystems for FreeNAS and TrueNAS 12.

<https://www.ixsystems.com/community/threads/starting-our-next-open-source-project-truenas-scale.85203/>

## **FREEBSD PROJECT SURVEYS DEVELOPMENT PRIORITIES:**

06/05/2020

FreeBSD developers have announced a survey for users and developers of the project, which should help to prioritize development and identify areas that require special attention. The survey includes about 50 questions and takes approximately 15 minutes to complete. Replies will be accepted until June 16th.

Questions cover topics such as scope, preferences in development tools, relation to default settings, priorities in the area of performance and security, wishes for the terms of support, features of working in FreeBSD. There is a section on the attitude towards switching to Git and platforms like GitHub and Gitlab.

<https://lists.freebsd.org/pipermail/freebsd-announce/2020-June/001955.html>

## **RUST 1.44 PROGRAMMING LANGUAGE RELEASED:**

06/05/2020

The release of Rust 1.44, based on the Mozilla project, has been published. The language is focused on safe work with memory, provides automatic memory management and provides means to achieve high concurrency of tasks, without using the garbage collector and runtime. Automatic memory management in Rust saves the developer from errors when manipulating pointers and protects against problems arising from low-level work with memory, such as accessing a memory area after it is freed, dereferencing null pointers, going out of buffer boundaries, etc. To distribute libraries, ensure compilation, and manage project dependencies, the Cargo package manager is developed, which allows you to get the libraries you need for the program in one click. The crates.io repository is for hosting libraries.

<https://blog.rust-lang.org/2020/06/04/Rust-1.44.0.html>

## SUPPORT FOR LINUX 5.4 AND 4.19 LTS KERNELS EXTENDED TO SIX YEARS: 06/05/2020

The support period for Linux 5.4 and 4.19 LTS cores, which are supported by Greg Kroah-Hartman and Sasha Levin, is extended to December 2025 and 2024, respectively. The Linux 4.19 kernel is used in Debian 10, is considered by Google as the basis for the base universal Android kernel and comes in the Android 10 platform and the 5.4 kernel is used in Ubuntu 20.04 LTS.

Thus, as in the case of kernels 3.16, 4.9, 4.4 and 4.14, branches 5.4 and 4.19 will be supported for 6 years. Initially, they were planning to support it for 2 years (until December 2020 and 2021). Support for the Linux 3.16 kernel released in August 2014 ends in June 2020. The kernel 4.14 will be supported until January 2024, 4.9 until January 2023, and 4.4 until February 2022. For regular non-LTS kernel releases, updates are only

released until the next stable branch (for example, updates for branch 5.6 were released before release 5.7).

On the other hand, kernels 4.4 and 4.19, Linux Foundation provides SLTS (Super Long Term Support) branches, which are separately maintained and will be supported for 10-20 years. Maintenance of SLTS branches is carried out within the framework of the Civil Infrastructure Platform project, in which companies such as Toshiba, Siemens, Renesas, Hitachi and MOXA participate. SLTS kernels are oriented towards application in technical systems of civil infrastructure and in important industrial systems.

<https://git.kernel.org/pub/scm/docs/kernel/website.git/commit?id=9693fe6eb7c4645d55f94671a29508dd9e737b4f>

## PALE MOON BROWSER RELEASE 28.10: 06/05/2020

Pale Moon 28.10 web browser, a branch from the Firefox codebase, said to provide higher

performance, preserve the classic interface, minimize memory consumption and provide additional configuration options. Pale Moon binaries are configured for Windows and Linux (x86 and x86\_64). The project code is distributed under the MPLv2 (Mozilla Public License).

The project adheres to the classic layout of the interface, without a transition to the Australis interface integrated into Firefox 29, and with the provision of extensive customization options. Among the removed components are DRM, Social API, WebRTC, PDF viewer, Crash Reporter, code for collecting statistics, tools for parental control and people with disabilities.

<https://forum.palemoon.org/viewtopic.php?f=1&t=24527>

## BLENDER 2.83 3D MODELING SYSTEM RELEASED: 06/06/2020

The new release, which includes over 1250 fixes and improvements, three months after

the release of Blender 2.82 is available. The main focus during the preparation of the new version was focused on optimizing performance - the work of undo, sketch pencil and preview rendering were accelerated. Cycles engine adds support for adaptive sampling. They added new sculpting tools Cloth Brush and Face Sets and implemented a noise reduction system with support for NVIDIA RTX accelerators. Initial support for virtual reality based on the OpenXR standard and the ability to import OpenVDB files is provided.

<https://www.blender.org/press/blender-2-83-release/>

## NFTABLES 0.9.5 BATCH FILTER RELEASE: 06/07/2020

Nftables 0.9.5, developed as a replacement for iptables, ip6table, arptables and ebtables due to the unification of packet filtering interfaces for IPv4, IPv6, ARP and network bridges, is out. The nftables package includes packet filter components that work in user space, while at the kernel

level, the `nf_tables` subsystem is a part of the Linux kernel since release 3.13. The changes necessary for the `nftables` 0.9.5 release to work are included in the Linux 5.7 kernel .

<https://marc.info/?l=netfilter&m=159144250132190>

## ANOTHER GERMAN CITY WANTS TO REPLACE MICROSOFT 365:

Hamburg is reportedly looking into embracing open-source software on local computers in an attempt to reduce reliance on paid products and to become what's being described as "a model in digital sovereignty." A project was launched to create an open cloud office suite Phoenix, which is planned to be used in the local parliament. The project was entrusted to the non-profit organization Dataport, which develops IT systems for government agencies. Phoenix will evolve as a modular product that can be deployed both in rented cloud environments and on your equipment.

<https://news.softpedia.com/news/another-german-city-wants-to-replace-microsoft-with-open-source-software-530156.shtml>

## NETWORK SECURITY TOOLKIT 32 RELEASED: 06/08/2020

NST Live distribution (Network Security Toolkit) 32-11992, designed to analyze network security and monitor its functioning, is out. The bootable iso image (x86\_64) is 4.1 GB in size. A special repository has been made for users of Fedora Linux, which makes it possible to install all the work that was created as part of the NST project into an already installed system. The distribution is based on Fedora 30 and allows the installation of additional packages from external repositories compatible with Fedora Linux.

The distribution kit includes a large selection of applications related to network security (for example: Wireshark, NTop, Nessus, Snort, NMap, Kismet, TcpTrack, Etherape, nsttracroute, Ettercap, etc.). To manage the security check process and automate the call of

various utilities, a special web-interface is available, which also integrates a web-frontend for Wireshark. The DE is based on FluxBox.

<https://sourceforge.net/p/nst/news/2020/06/nst-version-32-11992-released/>

## CANONICAL OFFERS PATCHES TO SPEED UP SLEEP MODE ACTIVATION: 06/09/2020

Canonical offered, in the Linux kernel development mailing list, a set of patches for the implementation of opportunistic memory cleaning ("opportunistic memory reclaim"). It can significantly reduce the time in sleep mode. Optimization is achieved by proactively invoking the release of secondary memory structures that do not contain unique information and can be dynamically restored after returning from sleep mode (for example, anonymous memory areas and various memory page caches). The main idea is that after removing unnecessary data, the size of the memory image is

reduced to save before going into sleep mode and, accordingly, less time is required for writing and reading from a slow medium.

<https://lkml.org/lkml/2020/6/1/684>

## EXIM MAIL SERVER 4.94: 06/09/2020

After 6 months of development, Exim 4.94 mail server is out. Lots of bug fixes and new features were added. According to the May automated survey of about a million mail servers, Exim's share is 57.59% (53.03% a year ago), Postfix is used by 34.70% (34.51%) of mail servers, Sendmail - 3.75% (4.05%), Microsoft Exchange - 0.42% (0.57%).

Changes in the new release may result in backward compatibility issues. In particular, some modes of transport stopped working with raw data (tainted, values based on data received from the sender) when determining the delivery location.

<https://lists.exim.org/lurker/message/20200601.152400.f7bce8f6.en.html>

## KDE PLASMA 5.19 DESKTOP RELEASE:

06/09/2020

The release of the custom KDE Plasma 5.19 shell, built using the KDE Frameworks 5 platform and the Qt 5 library using OpenGL / OpenGL ES to accelerate rendering, is available. At the time of writing, you can evaluate the new version through the live cd from the openSUSE project and the KDE Neon User Edition project. Packages for various distributions can be found on this page.

<https://kde.org/announcements/plasma-5.19.0.php>

## SECOND BETA RELEASE OF THE HAIKU R1 OPERATING SYSTEM:

06/10/2020

Initially, the project was created as a reaction to the closure of BeOS OS and developed under the name OpenBeOS, but was renamed in 2004 due to claims related to the use of the BeOS trademark in the name. To evaluate the new release, several bootable Live-images (x86, x86-64) are available for download. The source code for most of Haiku OS is distributed under a free MIT license, with the exception of some libraries, media codecs, and components borrowed from other projects.

<https://www.haiku-os.org/news/2020-06-09-haiku-r1-beta2/>

## LINUX SOUND SUBSCRIPTION RELEASE - ALSA 1.2.3:

06/10/2020

The new version involves updating libraries, utilities, and plugins that work at the user level. Drivers develop in sync with the Linux kernel. In addition to numerous fixes in the drivers, we can note the support of the Linux 5.7 kernel, the extension of the PCM, Mixer and Topology APIs (loading of handlers by drivers from user space). Implemented relocatable snd\_dlopen for glibc. The alsactl utility provides the ability to build without UCM (Use Case Manager) support and adds initial support for the UCM init command to apply initialization settings to sound cards.

## FULL CIRCLE WEEKLY NEWS



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# DistroWatch.com

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

<https://mailman.alsa-project.org/pipermail/alsa-devel/2020-June/168753.html>

## APACHE NETBEANS 12.0 IDE:

06/10/2020

The Apache Software Foundation Organization introduced NetBeans 12.0. This is the sixth release by the Apache Foundation after the transfer of NetBeans code by Oracle and the first release after moving a project from an incubator to the category of primary Apache projects. The release of Apache NetBeans 12 will be accompanied by an extended support cycle (LTS).

The development environment provides support for the Java SE, Java EE, PHP, JavaScript, and Groovy programming languages. The integration of support for C / C ++ languages has again been postponed to the next release.

<https://blogs.apache.org/netbeans/entry/announce-apache-netbeans-12-0>

## PINETAB TABLET AVAILABLE WITH UBUNTU TOUCH AVAILABLE FOR ORDER:

06/10/2020

The Pine64 community has begun accepting orders for the 10.1-inch PineTab tablet , shipped with the Ubuntu Touch environment from the UBports project. As an option, PostmarketOS and Arch Linux ARM distro's are provided. The tablet is sold for \$ 100, and \$ 120 gets you a complete set with a detachable keyboard that allows you to use the device as a normal laptop. Delivery is expected in July.

<https://www.pine64.org/2020/05/15/may-update-pinetab-pre-orders-pinephone-qi-charging-more/>

## NGINX PREVIEW RELEASED WITH QUIC AND HTTP / 3 SUPPORT:

06/11/2020

NGINX announced the start of testing the implementation of the QUIC and HTTP / 3 protocols in the HTTP server and nginx proxy.

The implementation is based on the 27th draft of the IETF-QUIC specification and is available through a separate repository, a branch from release 1.19.0. The code is distributed under the BSD license and does not overlap with the previously proposed HTTP / 3 implementation for nginx from Cloudflare, which is a separate project.

Support for HTTP / 3 in nginx is marked as experimental, since not all protocol features are implemented. At the same time, nginx can already be used to send responses to simple HTTP / 3 requests over QUIC and download / upload large files.

<https://www.nginx.com/blog/introducing-technology-preview-nginx-support-for-quic-http-3/>

## PIDGIN 2.14 RELEASED:

06/11/2020

It has been two years since the last release of Pidgin. It supports such networks as XMPP, Bonjour, Gadu-Gadu, ICQ, IRC , and Novell GroupWise. The Pidgin GUI is written using the GTK + library and

features a single address book, simultaneous work on several networks, a tab-based interface, work with avatars and integration with the notification area of Windows, GNOME and KDE. Support for connecting plug-ins makes it easy to extend the functionality of Pidgin, and the implementation of basic protocol support in a separate libpurple library makes it possible to create custom implementations based on Pidgin technologies (for example, Adium for macOS).

<https://pidgin.im/posts/2020-06-2.14.0-released/>

## RELEASE OF THE GIMP GRAPHICS EDITOR 2.10.20:

06/11/2020

The refinement of functionality and increasing the stability of the 2.10 branch is continued. A package in flatpak format is available for installation (the package in snap format has not been updated as of yet).

As for the plans for the future, continued work on the future GIMP 3 branch was cited, in which

significant code base cleaning will be carried out and the transition to GTK3 will be made. The master branch is preparing for branch 2.99.2, the first unstable release of the 2.99 series, on which release 3.0 will be based in the future.

<https://www.gimp.org/news/2020/06/11/gimp-2-10-20-released/>

## ELEMENTARY OS DISTRIBUTION INTRODUCES OEM ON LAPTOPS:

06/12/2020

The developers of the elementary OS distribution have announced the preparation of OEM images for manufacturers who want to pre-install elementary OS on their devices. The first agreements to pre-install elementary OS on laptops were made with "Laptop With Linux" and Star Labs, who specialize in supplying laptops with various Linux distributions.

Star Lab provides a line of compact notebooks with screens from 11 to 13.3 inches, on which, in addition to elementary OS, Ubuntu,

Linux Mint, Zorin OS and Manjaro are available. Laptop With Linux offers larger and more powerful laptops with screens from 14 to 17.3 inches, which can also be preinstalled with Ubuntu, Fedora, Manjaro, Debian, Linux Mint, Kubuntu, Xubuntu, Ubuntu MATE, Zorin OS and Kali Linux. Manufacturers noted the visual appeal of elementary OS and focus on usability.

<https://blog.elementary.io/now-shipping-elementary-os/>

## JUNE KDE APPLICATION UPDATE 20.04.2:

06/12/2020

In accordance with the monthly update publishing cycle, introduced last year, the June consolidated update of applications (04/20/2) developed by the KDE project is out. In total, as part of the January update, releases of more than 120 programs, libraries and plugins were published. Information on the availability of Live-images with new releases of applications, can be obtained on this page:

[https://community.kde.org/Plasma/Live\\_Images](https://community.kde.org/Plasma/Live_Images)

## UPDATE TO ALT P9 STARTER KITS:

06/13/2020

The fifth edition of starter kits is available on the Ninth Alt Platform. Starter kits are suitable for beginning work with a stable repository for experienced users who prefer to independently determine the list of application packages and configure their system. Starter kits as composite works and are licensed under the GPLv2 + license. Images include the base system, one of the desktop environments, or a set of specialized applications.

<https://lists.altlinux.org/pipermail/community/2020-June/688092.html>

## MOBIAN - DEBIAN FOR MOBILE DEVICES:

06/14/2020

As part of the Mobian project, an attempt was made to create

a version of Debian GNU / Linux for mobile devices. The builds use the standard Debian package base, the GNOME application suite and the Phosh user shell developed by Purism for the Librem 5 smartphone. Phosh is based on GNOME technologies (GTK, GSettings, DBus) and uses the Phoc composite server running on top of Wayland. Mobian has so far limited itself to building images only for the PinePhone smartphone, distributed by the Pine64 community.

<https://mobian-project.org/>

## REMOTE EXPLOITED VULNERABILITIES IN INTEL AMT AND ISM

### SUBSYSTEMS:

06/13/2020

Intel has fixed two critical vulnerabilities (CVE-2020-0594, CVE-2020-0595) in the implementation of Intel Active Management Technology (AMT) and Intel Standard Manageability (ISM), which provide interfaces for monitoring and controlling equipment. The problems are

assigned the highest danger level (9.8 out of 10 CVSS), since vulnerabilities allow an unauthenticated attacker to gain access to remote equipment management functions via a network by sending specially designed IPv6 packets. The problem only appears when you enable IPv6 access support in AMT, which is disabled by default. Vulnerabilities were fixed in firmware updates 11.8.77, 11.12.77, 11.22.77 and 12.0.64.

<https://www.intel.com/content/www/us/en/security-center/advisory/intel-sa-00295.html>

## **CENTOS LINUX 8.2 RELEASE (2004):** 06/15/2020

The CentOS 2004 distribution is fully binary compatible with RHEL 8.2, changes made to packages are usually reduced to rebranding and replacement of decorations. CentOS 2004 builds have been prepared (7 GB DVD and 550 MB netboot) for x86\_64, Aarch64 (ARM64) and ppc64le architectures. SRPMS packages and debug info are available through

[vault.centos.org](http://vault.centos.org) .

In addition to the new features introduced in RHEL 8.2, the contents of 34 packages were changed in CentOS 2004, including anaconda, dhcp, firefox, grub2, httpd, kernel, PackageKit and yum.

<https://lists.centos.org/pipermail/centos-announce/2020-June/035756.html>

## **PINEPHONE SMARTPHONE WITH POSTMARKETOS INTRODUCED:** 06/15/2020

The Pine64 community has announced the early start for receiving pre-orders for the PinePhone postmarketOS Community Edition smartphone, equipped with the postmarketOS mobile platform based on Alpine Linux, Musl and BusyBox. The opening of pre-orders is scheduled for early July 2020. The cost of the smartphone will be \$ 150.

By default, the Phosh custom shell is being developed by Purism for the Librem 5 smartphone based on GNOME and Wayland

technologies. If the user wants, they can download the firmware option from KDE Plasma Mobile, but in order not to duplicate efforts to stabilize postmarketOS Community Edition, the primary environment is Phosh.

<https://www.pine64.org/2020/06/15/june-update-postmarketos-ce-pinephone-shipping-pine64-cluster/>

## **FFMPEG 4.3 MULTIMEDIA PACKAGE LAUNCHED WITH VULKAN GRAPHICS API SUPPORT:** 06/16/2020

After ten months of development, the multimedia package FFmpeg 4.3 is out, which includes a set of applications and a collection of libraries for operations on various multimedia formats (recording, converting and decoding audio and video formats). The package is distributed under the LGPL and GPL licenses; the development of FFmpeg is carried out adjacent to the MPlayer project .

[https://ffmpeg.org/download.html#release\\_4.3](https://ffmpeg.org/download.html#release_4.3)

## **QT 6 FIRST TEST RELEASE:** 06/16/2020

Qt Company has published the first test release of the new Qt 6 branch, in which major architectural changes will be proposed. For building you will need a compiler that supports the C++ 17 standard. The release includes only the initial framework of the future Qt 6 release, which is scheduled for December 1, 2020. Functionality in the Qt 6 branch will expand until the code base is frozen on August 31. There is a long list of key features to check out here:

<https://www.qt.io/blog/first-qt-6.0-snapshot-available>

## **FREEBSD 11.4 RELEASE:** 06/16/2020

11 months after the release of 11.3 and 7 months since the release of 12.1, we have FreeBSD 11.4. Builds are available for amd64 architecture, i386, powerpc,

powerpc64, sparc64 , aarch64 and armv6 (BEAGLEBONE, CUBIEBOARD, CUBIEBOARD2, CUBOX-HUMMINGBOARD, Raspberry Pi B, Raspberry Pi 2, PANDABOARD, WANDBOARD). Builds for virtualization systems (QCOW2, VHD, VMDK, raw) and Amazon EC2 cloud environments are also available.

FreeBSD 11.4 will be the latest release in the 11.x series. Support for release 11.3 will be discontinued after 3 months, and support for FreeBSD 11.4 and the entire 11-STABLE branch will last until September 30, 2021. The release of FreeBSD 12.2 is expected on October 27th.

<https://www.freebsd.org/releases/11.4R/announce.html>

## SEARCH KEY LEAK THROUGH DNS IN FIREFOX AND CHROME:

06/17/2020

Firefox and Chrome revealed that a feature of processing search queries typed in the address bar, leads to information leakage through the provider's DNS server.

The essence of the problem is that if the search query consists of only one word, the browser first tries to determine the presence of a host with the same name in DNS, assuming that the user is trying to open a subdomain, and only then redirects the request to the search system. Thus, the owner of the DNS server specified in the user's settings receives information about single-word search queries.

The problem manifests itself when using both the provider's DNS server and the DNS over HTTPS (DoH) services, if the settings have a DNS suffix (set by default when receiving parameters via DHCP). Moreover, the main problem is that even when DoH is turned on, requests continue to be sent through the provider's DNS server specified in the system. It is important that a resolution attempt is made only when sending search queries consisting of one word. Using a few words, DNS is not accessed. Just so you know, this does not happen in the TOR browser.

<https://github.com/samduy/blog/tree/master/firefox/privacy-leakage>

## MONOLINUX BOOTS INTO AN ARMV7 CPU 528 MHZ IN 0.37 SECONDS:

06/18/2020

Erik Moqvist, author of the Simba platform and cantools toolkit, is developing a new Monolinux distribution. Focused on creating embedded Linux systems to separately run certain C applications. The distribution is notable for the fact that the software is executed in the form of a single statically linked executable file that includes all the components necessary for the application to work (in fact, the distribution consists of the Linux kernel and a ram disk with a statically assembled init process, including the application and the necessary libraries) . The code is distributed under the MIT license.

<https://github.com/eerimoq/monolinux>

## KRITA 4.3.0 RASTER GRAPHICS EDITOR RELEASED:

06/18/2020

Krita 4.3.0 editor supports multi-layer image processing, provides tools for working with various color models and has a large set of tools for digital painting, sketching and texture formation. Self-contained images in the ApplImage format for Linux, experimental APK-packages for ChromeOS and Android, as well as binary assemblies for macOS and Windows are available for installation.

<https://krita.org/en/item/krita-4-3-0-released/>

## GOOGLE PUBLISHED TSUNAMI SECURITY SCANNER CODE

06/19/2020

Google introduces: Tsunami security scanner, designed to check hosts on the network for known vulnerabilities or identify problems with settings that affect the security of infrastructure. Tsunami provides a common, universal platform whose functionality is defined through plugins. For example, there is a plug-in for port scanning based on nmap and a plug-in for checking

unreliable authentication parameters based on Ncrack, as well as plug-ins with vulnerability detectors in Hadoop Yarn, Jenkins, Jupyter and Wordpress. The project code is written in Java and distributed under the Apache 2.0 license.

The aim of the project is to provide a tool for the rapid detection of vulnerabilities in large companies with extensive network infrastructures.

<https://opensource.googleblog.com/2020/06/tsunami-extensible-network-scanning.html>

## GPU DRIVER WITH VULKAN API SUPPORT PREPARED FOR OLDER RASPBERRY PI

### BOARDS:

06/21/2020

The first stable release of the open graphics driver RPi-VK-Driver 1.0 is out, which implements Vulkan graphics API support for older Raspberry Pi boards shipped with the Broadcom Videocore IV GPU. The driver is suitable for all

models of Raspberry Pi boards released before the Raspberry Pi 4, from "Zero" and "1 Model A" to "3 Model B +" and "Compute Module 3+". The driver was developed by Martin Thomas, an engineer from NVIDIA, however, the development was carried out as a personal project, not related to NVIDIA (the driver was developed over the past two years in his spare time). The code is distributed under the MIT license.

<https://www.raspberrypi.org/forums/viewtopic.php?f=63&t=277779>

## SOLARIS 11.4 SRU22 IS AVAILABLE:

06/16/2020

The Solaris 11.4 SRU 22 (Support Repository Update) operating system update has been published. It offers a series of regular fixes and improvements for the Solaris 11.4 branch. To install the corrections suggested in the update, just run the 'pkg update' command.

<https://blogs.oracle.com/solaris/announcing-oracle-solaris-114-sru22>

## GNOME 3.36.3 AND KDE 5.19.1 UPDATE:

06/17/2020

GNOME 3.36.3 is available, which includes bug fixes, updated documentation, improved translations, and minor improvements to increase stability.

Of the changes highlighted: In the Epiphany browser, the search for bookmark tags in the URL field has been resumed. Boxes virtual machine manager has disabled VM creation with EFI firmware. In the gnome-control-center, the display of the add user button and the panel with access rights is provided, if no users are found. On the desktop, the original file name is saved when creating thumbnails. The gnome-shell-extension-prefs layer has been added to gnome-shell, the scroll timeout in overview mode has been reduced, and the "Do Not Disturb" mode setting between restarts has been saved. The Mutter window manager implements the definition of the

touch-screen mode when using the X11 backend.

A new bug fix release of the KDE Plasma 5.19.1 desktop is also out, in which new translations are added and bugs are fixed. This includes problems with displaying an applet with a battery indicator in the system tray and setting up a shutdown confirmation dialog.

<https://mail.gnome.org/archives/gnome-announce-list/2020-June/msg00009.html>

<https://github.com/KDE/drkonqi>

## VLC 3.0.11 MEDIA PLAYER UPDATE WITH VULNERABILITY ELIMINATION:

06/17/2020

VLC 3.0.11 bugfix release, in which the accumulated errors are fixed including vulnerability CVE-2020-13428. The vulnerability potentially allows organizing the execution of attacker code when playing a specially designed video in H.264 (Annex-B) format, packaged, for example, in an AVI

container. There is no mention of a working exploit yet. In addition to problems in the VLC code, two vulnerabilities ( CVE-2020-9308 , CVE-2019-19221 ) are fixed in the libarchive library, which is built into some boot kits.

Among the non-security related changes, the elimination of regressions in working with HLS and AAC, as well as the improvement of the position change in the stream for M4A files are noted. Builds for macOS resolved issues that could lead to disruption of audio playback, a crash when accessing mounted Bluray disks, and crash on startup. Android-specific errors in the code for changing the sampling rate were also fixed.

<http://www.videolan.org/vlc/releases/3.0.11.html>

## **DROPBEAR 2020.79 SSH SERVER RELEASED:** 06/17/2020

**A** new release of Dropbear 2020.79, a compact server and SSH client, distributed under the MIT license and used mainly on

embedded systems such as wireless routers, is available for download. Dropbear is characterized by low memory consumption (with static linking with uClibc it only takes up 110kB), the ability to disable unnecessary functionality at the build stage and support for building the client and server in one executable file, similar to busybox. Dropbear supports X11 redirection, is compatible with the OpenSSH key file (~ / .ssh / authorized\_keys) and can create multi-connections with forwarding through a transit host.

<https://lists.ucc.gu.uwa.edu.au/pipermail/dropbear/2020q2/002241.html>

## **WI-FI DAEMON RELEASE IWD 1.8:** 06/17/2020

**T**he release of the Wi-Fi daemon IWD 1.8 (iNet Wireless Daemon), developed by Intel as an alternative to wpa\_supplicant for organizing the connection of Linux systems to a wireless network, is available. IWD can be used both independently and act as a backend for network configurators such as

Network Manager and ConnMan. The project is suitable for use on embedded devices and is optimized for minimal memory and disk space consumption. IWD does not use external libraries and refers only to the capabilities provided by the regular Linux kernel (the Linux kernel and Glibc are sufficient for operation). IWD includes its own implementation of a DHCP client and a set of cryptographic functions . The project code is written in C and licensed under LGPLv2.1.

<https://git.kernel.org/pub/scm/network/wireless/iwd.git/tag/?h=1.8>

## **HASHCAT 6.0.0 PASSWORD CRACKER RELEASED:** 06/17/2020

**A** major release of the hashcat 6.0.0 password matching program has been published, claiming to be the fastest and most functional in its field. Hashcat provides five selection modes and supports more than 300 optimized password hashing algorithms. Selection calculations can be parallelized using all the computing

resources available in the system, including using vector instructions of a CPU, GPU, and other hardware accelerators that support OpenCL or CUDA. It's possible to even create a distributed selection network. The project code is distributed under the MIT license.

<https://hashcat.net/forum/thread-9303.html>

## **UBUNTU PROJECT RELEASES BUILDS FOR DEPLOYING SERVER PLATFORMS ON RASPBERRY PI AND PC:** 06/18/2020

**C**anonical introduced the Ubuntu Appliance project. They have launched the publication of fully configured Ubuntu builds optimized for the rapid deployment of off-the-shelf server handlers on a Raspberry Pi or PC. Currently, the proposed build will launch NextCloud, MQTT-broker Mosquitto, Plex, OpenHAB and AdGuard. Builds make it possible with minimal effort to turn any PC or Raspberry Pi board into a server system that solves specific tasks, the updating and maintenance is

carried out automatically.

Builds are based on Ubuntu Core and pre-configured snap packages. Ubuntu Core is a compact version of the Ubuntu distribution, which instead of traditional deb packages uses the model of monolithic construction of the base system image, on top of which self-contained snap-in add-ons are launched. The platform uses the atomic update mechanism for snap packages as well as the base system. To ensure security, each component of the system is verified by digital signature, which allows you to protect the distribution from making hidden modifications or installing unverified snap-packages. Components supplied in Snap format are isolated using AppArmor and Seccomp, and the base file system is mounted in read-only mode. Updates are released regularly and delivered in OTA (over-the-air) mode.

<https://ubuntu.com/blog/the-ubuntu-appliance-portfolio>

## **XFCE PROJECT RELEASED XFDESKTOP 4.15.0 DESKTOP**

### **AND THUNAR 4.15.0 FILE MANAGER:**

06/20/2020

The xfdesktop 4.15.0 desktop manager, used in the Xfce user environment, for rendering icons on the desktop and setting background images, is out. Thunar 4.15.0 file manager, focusing on ensuring high speed and responsiveness, combined with providing an easy-to-use, intuitive and free of frills interface also hit the download mirrors. Remember that the odd releases of Xfce components are experimental. Changes in xfdesktop 4.15, some icons are updated, the minimum icon size is increased to 16, switching from exo-csource to using xdt-csource, ensuring that all selections are removed after a single click, adding the Shift + Ctrl + N hotkey to create directories, adding a function search for icons as you type, as well as, fixing errors and eliminating memory leaks.

<https://mail.xfce.org/pipermail/xfce-announce/2020-June/000867.html>

### **FREE PASCAL 3.2 COMPILER RELEASED:**

06/20/2020

It has been five years since version 3.0, now the release of the open-platform cross-platform compiler Free Pascal 3.2.0, compatible with Borland Pascal 7, Delphi, Think Pascal and Metrowerks Pascal, is available for download. In parallel, the Lazarus IDE is being developed, based on the Free Pascal compiler and performing tasks similar to Delphi.

<https://lists.freepascal.org/pipermail/fpc-announce/2020-June/000616.html>

### **NUMPY 1.19, PYTHON LIBRARY FOR SCIENTIFIC COMPUTING:**

06/21/2020

NumPy 1.19 is available, oriented to work with multidimensional arrays and matrices, as well as providing a large collection of functions with the implementation of various algorithms related to the use of matrices. NumPy is one of the most

popular libraries used for scientific calculations. The project code is written in Python using optimizations in C and distributed under the BSD license.

NumPy 1.19 discontinued support for Python 3.5 and removed the code to support working with Python 2 (the numpy.compat layer has been left for now). The supported versions are Python 3.6, 3.7 and 3.8. They improved support for NumPy wheel packages on the Aarch64 architecture and when using the Python PyPy implementation. Extended functionality of numpy.frompyfunc, np.str\_, numpy.copy, numpy.linalg.multi\_dot, numpy.count\_nonzero and numpy.array\_equal. They also improved detection of CPU capabilities, such as AVX support and added implementation of np.exp based on AVX512, which is 5-7 times faster, and is used for input data of type: np.float64.

<https://www.mail-archive.com/python-announce-list@python.org/msg08971.html>



# COMMAND & CONQUER

Written by Erik

## Rust Pt.3

Okay, rustafarians, we head back to Rust development, as @Daredevil14 and Ellin complained about where Lucas' rust blog went. It looks like you guys want more rust and less 'security nonsense'. Firstly, do not neglect to read the above book. If you are a complete beginner to rust or even programming, we got you covered here at FCM. These articles are not to replace the book mentioned above, think of it more as helpers along the way.

Defining your own functions:

Why? Functions are just code blocks you can use over and over by calling them. Clearly, they simplify life. Functions can return a

value, but they do not have to. You have seen a function, the main function we have been playing with. It is good practice to write functions, then simply call them in the main function. Rule of thumb, you recognise a function by the parenthesis. Example: `Println!();`

In C, one specifies the type of return value before the function.

```
int main (void)
```

In Rust they use an arrow. To make the arrow, simply type a dash followed by the greater than symbol. `"->"`

```
fn <functionname>(parameters)
-> returntype {}
```

This may seem a bit odd... If not, it seems that way to me.

For simplicity's sake, let's assume we want to make a function that adds two numbers and returns the answer. It may look something like this:

```
fn adder (num1: i32, num2:
i32) -> i32
{
    num1 + num2
}
```

Now I need you guys with peeled peepers. What is different? I'll wait.....

If you picked up that there was no semicolon at the end of the statement inside the adder function, you were correct. This

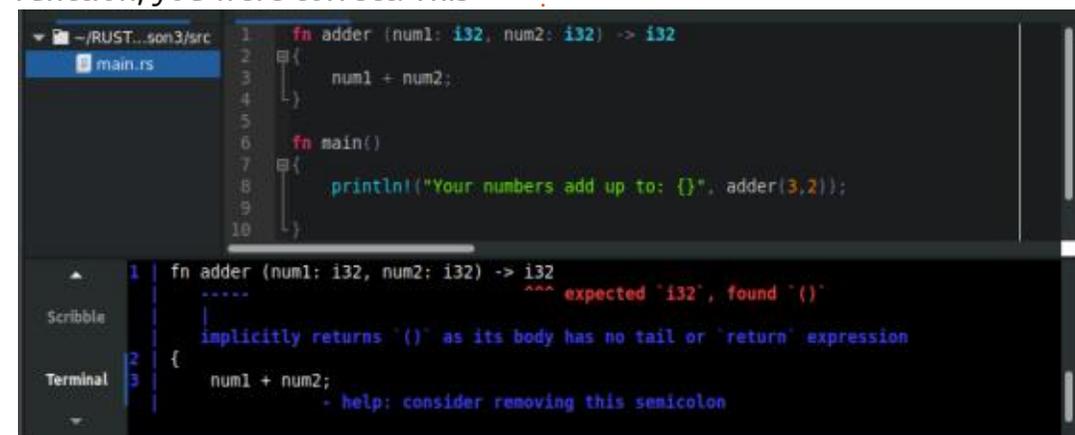
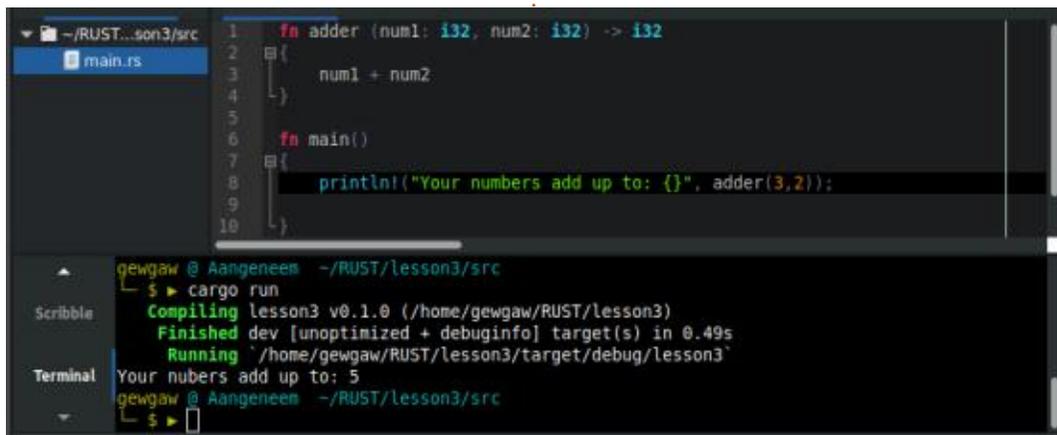
confuses the heck out of newbies. But, there is a syntax rule. You want to return something (a value is expected), that something comes from the LAST line. (Think of the semicolon as suppressing the output). In that case, you do not use a semicolon at the end of the statement. (The 'last line' is our only line).

If this is unclear or you have a better way to explain it, please email us on:

[misc@fullcirclemagazine.org](mailto:misc@fullcirclemagazine.org)

Now I actually want you to put a semicolon there and save and run it again.

Peruse the error output. Rust



# COMMAND & CONQUER

help is on the money! You will also see “rustc --explain E0308” at the end of the message. Run it and see. It is less helpful, but not a waste of your time. If you are having issues getting your head around it, there is another way. You can use the keyword “return” in front of that statement, but then you need to close it off with a semicolon.

```
return num1 + num2;
```

On from last issue: How did the number guessing game program work for you? In C, we include headers when using I/O functions.

```
include <stdio.h>
```

In Rust, we simply use the keyword ‘use’. The documentation describes it as prelude, but if it helps, you can think of it as a

header-file. <https://doc.rust-lang.org/std/prelude/index.html> - I try not to get hung up on terminology, but if you don't know the correct terminology, it becomes difficult to explain it to someone else. Call it Pinky if you like, as long as you know how to use it. If you followed Greg's Python tutorial, you may have seen “from tkinter import \*”. You need a way to pull in standard or non-standard libraries to use, so you don't have to write everything yourself. The next thing I want to cover is the rand crate. The example uses the rand 0.5.5 crate, though we have moved on since then. At the time of writing, the rand crate is sitting at 0.7.3. See: <https://crates.io/crates/rand>

The crates.io website is

something you should bookmark. It is filled with handy libraries, but more on that later. I would go into depth explaining crates, but the website does it so much better. See: <https://doc.rust-lang.org/cargo/guide/>

You may have heard the joke, “there is no such thing as AI; it is if-statements all the way down”.

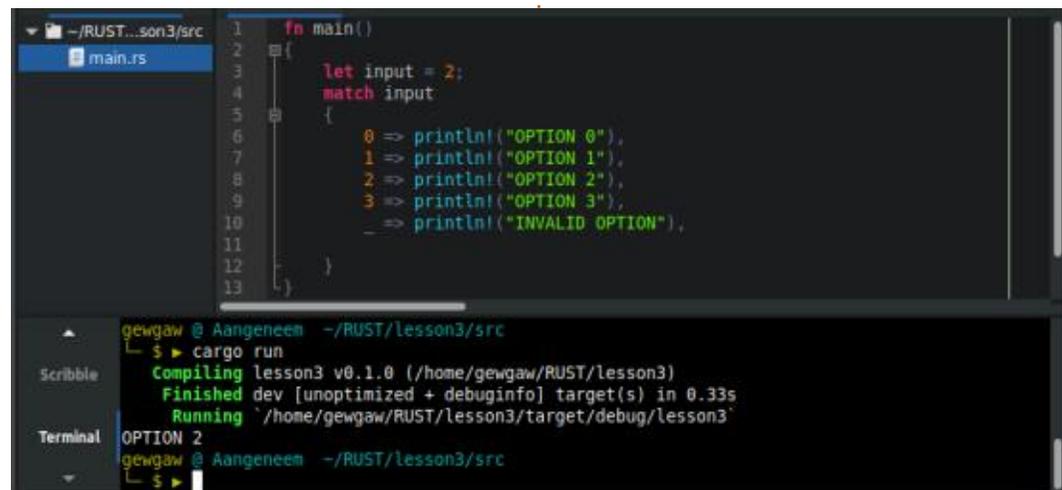
Still nothing? I am here all week...

Branching and making decisions is another must-know, when programming. We have for-loops, while-loops and if-statements. (There is also the loop-keyword you may not have seen). If you know what a case-statement or switch is, the equivalent in rust is the match-

keyword. If you have no idea, don't worry, we will look at it now.

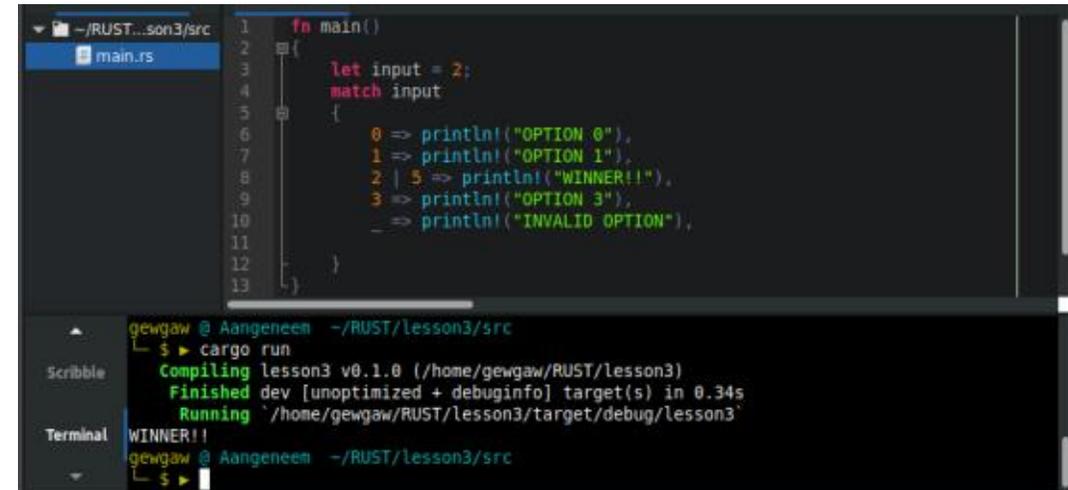
Match is not a dating app, it is a list of possibilities, or should that be probabilities. The only thing is, that it is finite. You do not want to make cases for every possible point on an elliptic curve. Match is specific. It is useful in, say, monkey puzzles, where you need to select the right answer, say from four possible answers, and display a message for your choice. You can even check more than one condition at a time too. Bottom left is an example.

We can have multiple conditions by using the OR operator. Try it with 2 and 5. Bottom right is another example.



```
1 fn main()
2 {
3     let input = 2;
4     match input
5     {
6         0 => println!("OPTION 0"),
7         1 => println!("OPTION 1"),
8         2 => println!("OPTION 2"),
9         3 => println!("OPTION 3"),
10        _ => println!("INVALID OPTION"),
11    }
12 }
13
```

```
gewgaw @ Aangeneem ~/RUST/lesson3/src
└─$ cargo run
Compiling lesson3 v0.1.0 (/home/gewgaw/RUST/lesson3)
Finished dev [unoptimized + debuginfo] target(s) in 0.33s
Running `/home/gewgaw/RUST/lesson3/target/debug/lesson3`
OPTION 2
gewgaw @ Aangeneem ~/RUST/lesson3/src
└─$
```



```
1 fn main()
2 {
3     let input = 2;
4     match input
5     {
6         0 => println!("OPTION 0"),
7         1 => println!("OPTION 1"),
8         2 | 5 => println!("WINNER!!"),
9         3 => println!("OPTION 3"),
10        _ => println!("INVALID OPTION"),
11    }
12 }
13
```

```
gewgaw @ Aangeneem ~/RUST/lesson3/src
└─$ cargo run
Compiling lesson3 v0.1.0 (/home/gewgaw/RUST/lesson3)
Finished dev [unoptimized + debuginfo] target(s) in 0.34s
Running `/home/gewgaw/RUST/lesson3/target/debug/lesson3`
WINNER!!
gewgaw @ Aangeneem ~/RUST/lesson3/src
└─$
```

# COMMAND & CONQUER

You can even match against a range (ellipses). It is deprecated, but it still works. See below left.

Most of this code is self-explanatory, except the underscore at the end. This tells rust we want to explicitly ignore all the other cases. If we don't do this, rust will tell us about all the matches we missed. See below right.

If we have two dip switches to set the baud rate of serial communication, there are four possibilities, and Rust recognises that. It even tells us which one we missed!

Next issue we can look at more conditionals.

If you have any questions or comments, email us: [misc@fullcirclemagazine.org](mailto:misc@fullcirclemagazine.org)



**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.

```
main.rs - /home/gewgaw/RUST/lesson3/src - Geany
File Edit Search View Document Project Build Tools Help
Documents
~/RUST...son3/src
main.rs
3 let input = 23;
4 match input
5 {
6     0 => println!("OPTION 0"),
7     1 => println!("OPTION 1"),
8     2 .. 29 => println!("WINNER!!"),
9     30 => println!("OPTION 3"),
10    _ => println!("INVALID OPTION"),
11 }
12
13
14
15
Scribble
note: '#[warn(ellipsis_inclusive_range_patterns)]' on by default
Terminal
Finished dev [unoptimized + debuginfo] target(s) in 0.30s
Running '/home/gewgaw/RUST/lesson3/target/debug/lesson3'
WINNER!!
gewgaw @ Aangeneem ~/RUST/lesson3/src
$
```

```
main.rs - /home/gewgaw/RUST/lesson3/src - Geany
File Edit Search View Document Project Build Tools Help
Documents
~/RUST...son3/src
main.rs
1 fn main()
2 {
3     let is_on = true;
4     let is_off = false;
5
6     match (is_on, is_off)
7     {
8         (true, true) => println!("Baud Rate 9600 "),
9         (true, false) => println!("Baud Rate 19200 "),
10        (false, false) => println!("Baud Rate 115200 "),
11    }
12 }
Compiling lesson3 v0.1.0 (/home/gewgaw/RUST/lesson3)
error[E0004]: non-exhaustive patterns: `(false, true)` not covered
--> src/main.rs:6:8
6     match (is_on, is_off)
           ~~~~~ pattern `(false, true)` not covered
help: ensure that all possible cases are being handled, possibly by adding wildcards or more match arms
line: 9 / 14 col: 48 set: 0 INS TAB mode: LF encoding: UTF-8 Filetype: Rust scope: main
```



This month I've decided to continue our discussion of dealing with data. This time, we will look at the "Law" of Truly Large Numbers.

Why did I decide to put Law in quotes? Because it's not really a law:

- There IS a Law of Large numbers that basically states that if you perform the same experiment a large number of times, the average of the results should be close to the expected outcome.
- The Law of Truly Large Numbers states that "with a large enough sample of data, many odd 'coincidences' are likely to happen." (<http://skepdic.com/lawofnumbers.html>)

This month, we will experiment to see if we can experience either of these two "laws".

Let's first take a look at random numbers. Computers CAN NOT, by themselves, generate TRULY random numbers. They can get pretty close, and most of us are fine with close enough. But what

exactly are random numbers?

A random number is a number that is independent – with no correlations between any successive numbers.

Probability theory says, basically, that if you have two outcomes that are equally likely to occur (the heads of a coin in this case), there is an equally likely chance that either will occur, or in the case of a coin toss, 50% that it will end up with heads and 50% that it will end up with tails.

Michael Crichton's Jurassic Park (either the book or the movie, but the movie is more fun in my opinion) has a good (but simplified) discussion on Chaos Theory where Ian Malcolm (played by Jeff Goldblum) describes the direction that a drop of water, running across the hand of Doctor Ellie Sattler (played by Laura Dern) will take. The same can be said about a coin striking the floor or the palm of your hand. It can skew the result just enough to make it more random.

```
# seed random number generator
seed(1)
# "flip" 10 times and do it twice.
todo = 10
loops = 2
```

Now, let's create a VERY simple Python program to check this out. We will use the numpy library for the random number generator, rather than the built-in Python random number generator. While both are pretty much the same thing, the numpy library has some additional options that make it a better choice for future work. It's not good enough for serious cryptography use, but for what we need, it's fine. Because of the f-string formatting, you will need to use Python 3.7 or greater.

```
from numpy.random import seed
from numpy.random import randint
```

Of course, we start with the imports. In the next line of code,

```
for loop in range(loops):
    flips = randint(0, 2, todo)
    print(flips)
```

we set the seed value of the random generator to a value of one. If you do this, you will get the same values that I do. To run this independently from me, just comment out the seed(1) line (above).

Now, we'll run the loop ten times and generate 10 random numbers between 0 and 1 (zero = Tails and 1 = Heads). The randint function gets a minimum value, a maximum value and the number of results to return in a list. The reason we use a value of 2 for the maximum value is that numpy takes this value and always returns values 1 less than the maximum.

Now step through the list of returned numbers and count the number of zeros and ones.

```
heads = 0
tails = 0
for flip in flips:
    if flip == 0:
        tails += 1
    else:
        heads += 1

print(f'Heads: {heads} - Tails: {tails}')
pctHeads = (heads/todo) * 100
print(f'Percentage of Heads: {pctHeads}%')
```

Name your program as cointoss.py and run it. You should see the following output...

```
$ python cointoss.py
```

```
[1 1 0 0 1 1 1 1 1 0]
Heads: 7 - Tails: 3
Percentage of Heads: 70.0%
[0 1 0 1 1 0 0 1 0 0]
Heads: 4 - Tails: 6
Percentage of Heads: 40.0%
```

It's not what you would expect to be. You would expect a 50% number of Heads each time. Take a coin and try it. You will find a similar result. It won't be 50% each time. Remember the Chaos Theory?

Now, the value of 10 "flips" is a fairly low number of samples. Let's try it with a larger sample size. Change the todo value to 1000 and re-run your program.

I'm going to shorten the output (shown below) to save space, but here is what you should see...

This time, our results were much closer to 50%, but not really close enough. What would it look like if we do a series of 100000 flips? Change the todo variable to 100000 and re-run the program.

```
[1 1 0 ... 0 0 0]
Heads: 49771 - Tails: 50229
Percentage of Heads: 49.771%
[0 0 0 ... 0 0 1]
Heads: 49943 - Tails: 50057
Percentage of Heads: 49.943%
```

Now we are very close to what

```
[1 1 0 0 1 1 1 1 1 0 0 1 0 1 1 0 0 1 0 0 0 1 0 0 1 0 0 0 1 0 0 0 1 1 1 1 1...
 0 0 1 1 1 1 1 1 1 1 0 1 1 0 1 1 1 0 0 0 0 0 0 1 0 1 0 0 1 1 0 0 0 0 0 0
 0]
Heads: 478 - Tails: 522
Percentage of Heads: 47.8%
[0 0 0 1 0 0 0 1 1 0 1 0 1 1 0 1 1 1 1 1 1 0 1 0 0 1 1 1 0 0 1 0 0 0 0...
 1 0 0 1 0 1 0 0 1 1 1 0 1 1 1 0 0 0 1 0 1 1 0 0 0 0 1 0 0 0 1 1 0 0 1 0 0
 0]
Heads: 497 - Tails: 503
Percentage of Heads: 49.7%
```

we expect the result to be, close enough to say that, yes we do get almost 50% distribution. In addition, we have now seen the Law of Large Numbers take effect.

But what about the "Law of Truly Large Numbers"? One of the examples that is often used to explain this would be (<http://improbability-principle.com/the-laws-of-the-improbability-principle/>):

*"In July 1975, a taxi in Hamilton, Bermuda knocked Erskine Lawrence Ebbin from his moped, killing him. The year before, his brother Neville Ebbin had been killed by the same driver driving the same taxi and carrying the same passenger while riding the same moped on the same street."*

In another example, "At a typical football game with 50,000 fans, most fans are likely to share their birthday with about 135 others in

attendance. (The notable exception will be those born on February 29. There will only be about 34 fans born on that day.)" I'm guessing that this example uses an American football game, as opposed to true football, but the result would most likely be the same regardless. Let's code another example to test this...

```
from numpy.random import seed
from numpy.random import randint
import datetime
# seed random number generator
seed(1)
```

Again, we start off with our imports (we added datetime for this example) and set the seed value. Next we set the number of random numbers in our list to be 50000 and create an empty list.

```
todo = 50000
dates = []
```

# HOWTO - PYTHON

Now we loop through a series of statements that pick valid dates at random. (I use Kite for my programming and they provided the base example for this code. I modified it slightly). Once we have the date, we append that to the list (top right)

Finally, we create a date (I picked my son's birthday) to see if it is in the list and print the number of times it occurred, if in fact it did.

```
datetocheck =  
datetime.date(1986, 6, 24)
```

```
print(f'Found  
{dates.count(datetocheck)}  
occurrences')
```

You might not be surprised that we got at least a few matches...

```
$python birthdays.py  
Found 3 occurrences
```

We could even modify the code to do this a number of times, keep track of the results and at the end, provide an average of the occurrences. I named this "birthdays2.py"

Here's the result (shortened of course):

```
$ python birthdays2.py
```

```
for tdo in range(todo):  
    start_date = datetime.date(1970, 1, 1)  
    end_date = datetime.date(2020, 6, 1)  
  
    time_between_dates = end_date - start_date  
    days_between_dates = time_between_dates.days  
    random_number_of_days = randint(0, days_between_dates)  
    random_date = start_date + datetime.timedelta(days=random_number_of_days)  
    dates.append(random_date)
```

```
from numpy.random import seed  
from numpy.random import randint  
import datetime  
# seed random number generator  
seed(1)  
todo = 50000  
sampleloops = 100  
samples = []  
for loop in range(sampleloops):  
    dates = []  
    for tdo in range(todo):  
        start_date = datetime.date(1970, 1, 1)  
        end_date = datetime.date(2020, 6, 1)  
        time_between_dates = end_date - start_date  
        days_between_dates = time_between_dates.days  
        random_number_of_days = randint(0, days_between_dates)  
        random_date = start_date + \  
            datetime.timedelta(days=random_number_of_days)  
        dates.append(random_date)  
    datetocheck = datetime.date(1986, 6, 24)  
    found = dates.count(datetocheck)  
    samples.append(found)  
    print(f'Found {dates.count(datetocheck)} occurrences')  
print(f'Results: {samples}')  
print(f'Average is {sum(samples)/len(samples)}')
```

```
Found 4 occurrences
```

```
...
```

```
Found 4 occurrences
```

```
Results: [4, 3, 5, 5, 6, 3,  
1, 3, 3, 4, 0, 2, 1, 0, 5, 2,  
3, 3, 3, 3, 4, 3, 3, 6, 5,  
3, 3, 1, 3, 2, 4, 4, 2, 4, 2,  
2, 2, 4, 0, 1]  
Average is 2.96
```

I hope that this has given you an appreciation of Large Numbers and Truly Large Numbers and random numbers in general.

I've put the code files up on PasteBin:

Cointoss.py

<https://pastebin.com/nXTZ6PLR>

Birthdays.py

<https://pastebin.com/u5ja3L3E>

Birthdays2.py

<https://pastebin.com/sfv4RvHi>



With the recent appearance of Ubuntu 20.04 and its extended family of distributions, I thought it would be a nice time to see which advances in hardware support have been taking place in the background. A new version of the Linux kernel (5.4), and various desktop managers, made me wonder if support for my HP Spectre x360 laptop was available. This 2-in-1, convertible or flip-screen laptop – depending on what you choose to call it – has been giving entire satisfaction with the 18.x and 19.x Ubuntu family as well as Linux Mint 19.x. Specifically, this unit has a high-density screen resolution at 1920x1080, which is a tad too much for a 13-inch diagonal screen. But screen resolution can easily be reduced to 1600x900 in all recent versions of Ubuntu, so this is not an issue. The tactile aspect of the screen has also been working well, though I have used it little since the laptop has quite a nice touchpad – precise, and with good feeling. So there was just one single niggle at the back of my mind: for the life of me, I was unable to use the laptop with its

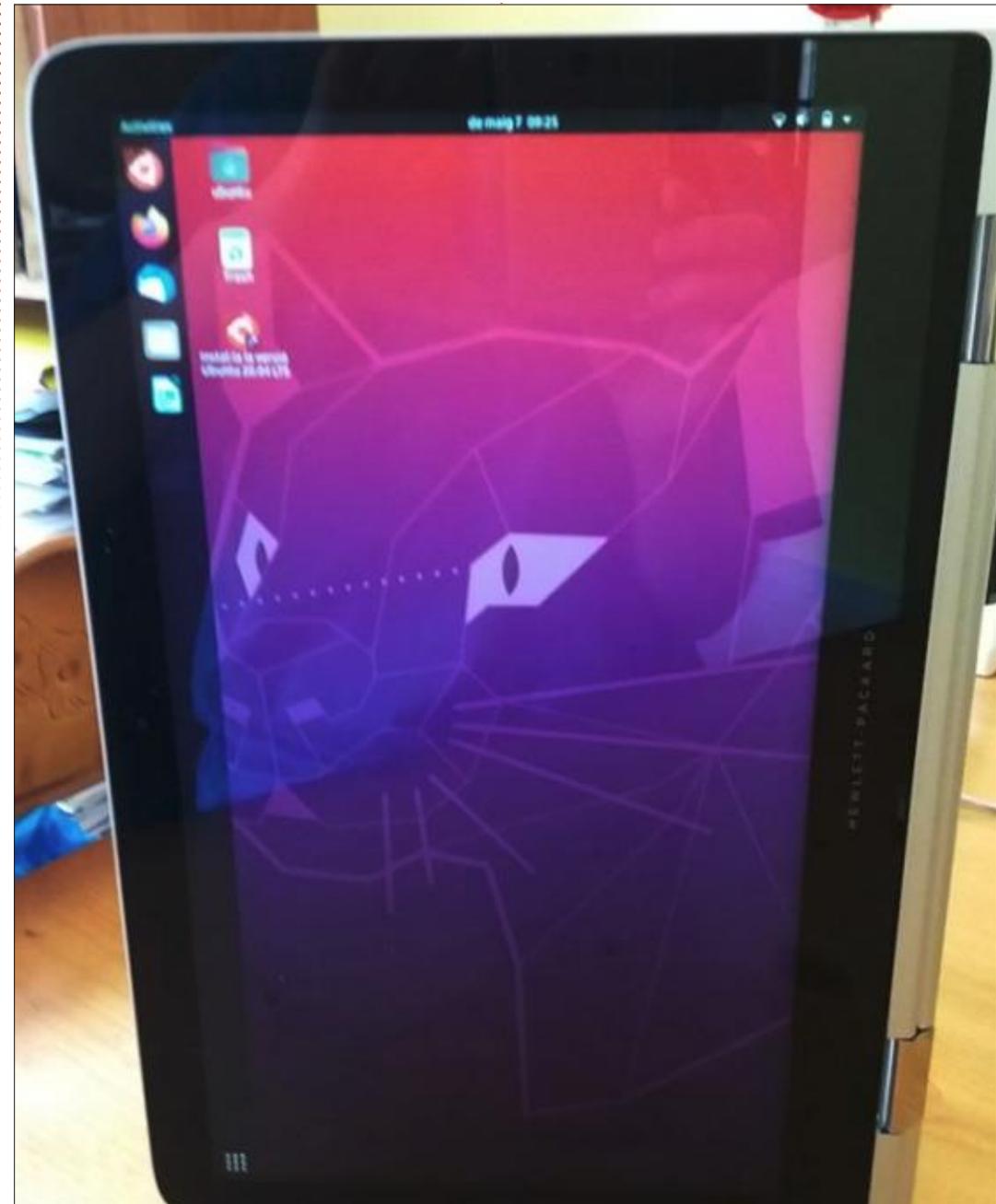
screen completely folded back, ie, in tablet mode. It could get there – sort of – but I needed to flip the screen orientation by hand, and the keyboard stayed active, which was a bit of a bother when holding the computer up by its back.

When Focal Fossa rolled around, the first version I tried out was Kubuntu – with excellent results. Startup times were severely reduced (with a very minor tweaking of systemd):

**graphical.target reached after 3.115s in userspace**

The Plasma desktop was beautiful as always, and even my Wacom tablet was recognized directly with new drivers that came with the kernel. So life was good... but not in tablet mode. No dice there.

Some days later, I tried Ubuntu 20.04 itself. This proved to be something of a letdown. It may be a matter of opinion, but I find this version of the Gnome desktop much better than in the past, but still not quite on the same level as



## HOWTO - CONVERTIBLE LAPTOP

KDE/Plasma. Graphical target times in the 20+ seconds do not compare well for Gnome. Perhaps I should mention this was using the very same laptop and booting off the same internal SSD drive in both cases.

However, something strange happened when, for some reason, the computer got tilted on its side. This was purely by accident, but the end result was interesting: the screen rotated by 90 degrees. The desktop was now vertical, with Ubuntu's traditional dock now occupying one of the longer sides.

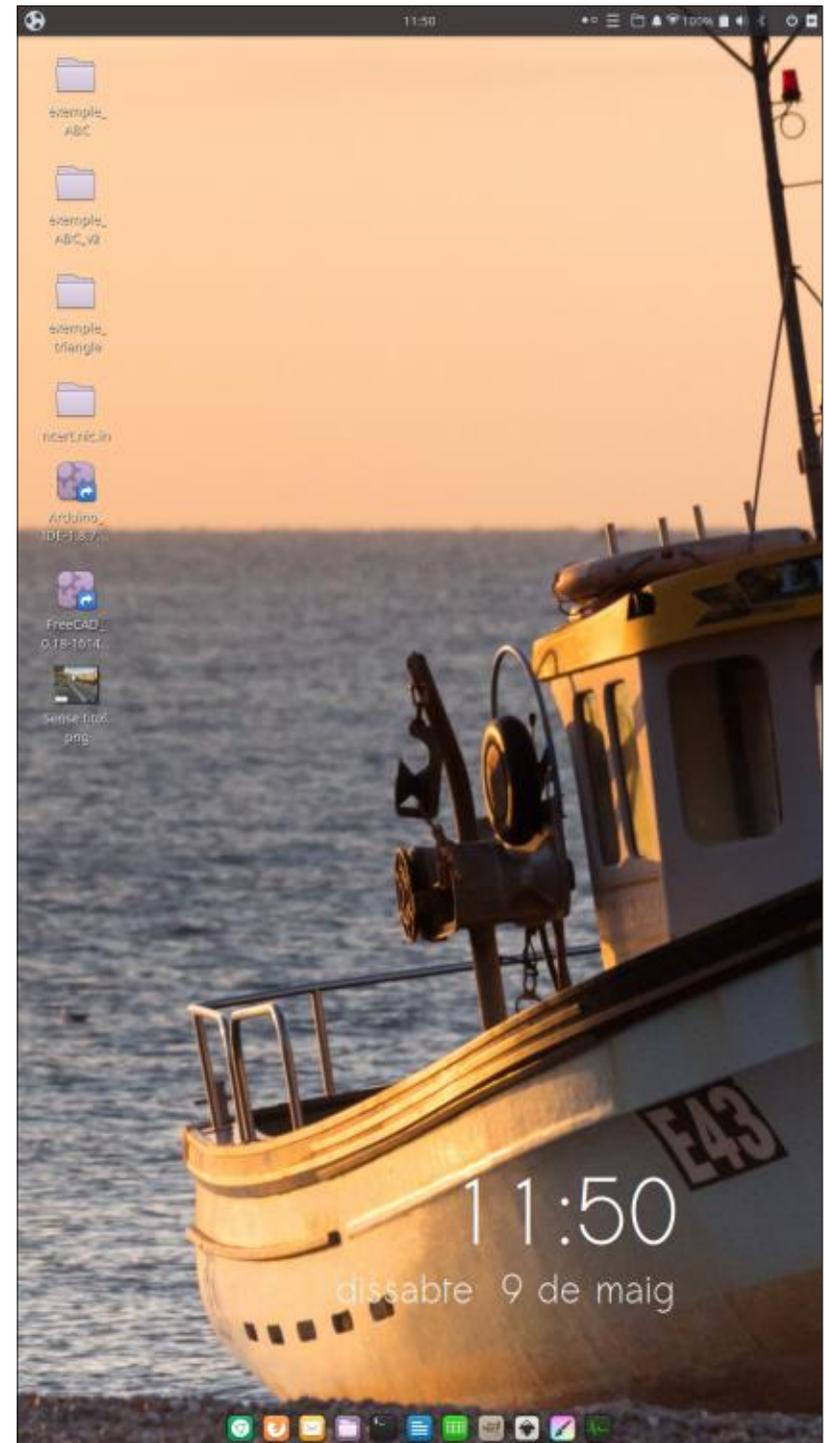
Further examination showed that the screen did, indeed, respond to changes in the physical orientation of the computer, rotating to one side, to the other, or even going completely upside-down if the laptop screen was folded in "tent mode".

Furthermore, once the screen had been folded back, the laptop's physical keyboard and track-pad were automatically deactivated. Now, some readers may be tempted to laugh at their screens, since this is well-known behavior for such convertible laptops. However, it should be stressed that this particular machine has never

suffered the indignity of running Windows, and that previous versions of Ubuntu do not seem to have offered easy out-of-the-box handling of tablet mode screen orientation.

So there I was, faced with a quandary. Kubuntu had been really good to me, but could not handle the tablet mode I really wanted to try out more completely. Ubuntu, on the other hand, was dog-slow, and did not suit my appreciation of things working well, fast and efficiently. It was then that a chance comment by our esteemed editor Ronnie came to mind: Ubuntu Budgie might be worth a try. The desktop environment in this distribution is known to be more responsive than Gnome, though using the very same GTK libraries. Perhaps – just perhaps – could tablet mode be made to work in Budgie?

And indeed it could. Exactly as with Ubuntu, the Budgie desktop manager responded instantly to rotation, and the keyboard and trackpad were deactivated when the screen was flipped over backwards. Tada! Now, I had a very nice 13-inch tablet, with a decent processor, memory and storage



space – but which I could, at will, flip back into a normal laptop mode and resume a more productive workflow with the standard keyboard.

There are some advantages to the vertical screen. A complete A4 page may be viewed with some comfort, for example, when reading a PDF file. The vertical screen can also be of use when doing text editing: in this case, too, being able to see the complete page does come in handy. However, an external USB keyboard would be needed, since the laptop's own set is tilted up by 90 degrees.

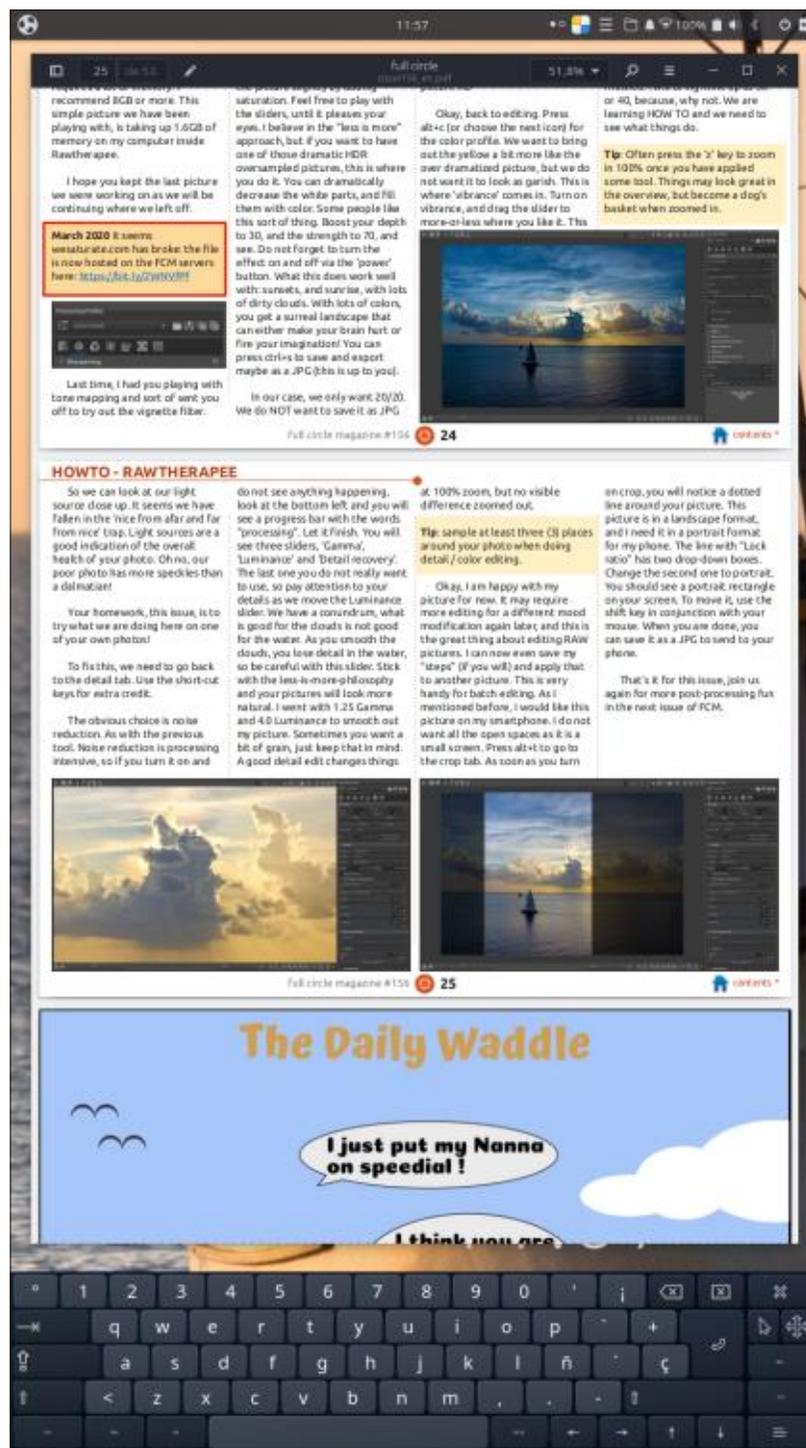
Finally, there is naturally the option of using Budgie's (and Gnome's) virtual keyboard application, called onboard. This can be configured to take up a strip at the bottom of our now rather narrow screen, which is advantageous since it leaves quite a large space available for our main applications – unlike most tablets. However, responses are not quite as sharp as with a physical keyboard, so my impression is that most users would actually prefer flipping the screen back to laptop mode and using the unit's physical

keyboard when needed. That being said, onboard does have a very nice theme that mimics the appearance of IBM's Model M mechanical keyboard.

All in all, I am very happy with progress achieved in the 20.04 crop of Ubuntu and sister distributions. Using a laptop in tablet mode and various other small tweaks may seem rather unimportant in the grand scheme of things. However, they do unlock features already present in the hardware, thus that I have paid for. So this is definitely a step or two in the good direction for GNU/Linux as a desktop operating system.



**Alan** holds a PhD. He teaches comp sci and eng at Escola Andorrana de Batxillerat. He has given GNU/Linux courses at the Uni of Andorra and taught GNU/Linux systems admin at the OU of Catalunya.





# HOW-TO

Written by Erik

# Rawtherapee - Pt4

Website: <https://rawtherapee.com/>  
Price: Free!

Rawtherapee just updated to version 5.8 and this will be the version I am working with. See: <https://rawtherapee.com/downloads/5.8/>

Though I have not really noticed any difference between version 5.8 and the previous version, there may be some small changes, so if you are not on version 5.8 and notice something, just move on or find the setting in your version. (However, the capture sharpening tool will not be in the older versions). That is the best way to learn. The learning curve for Rawtherapee is not as steep as some of the other editors.

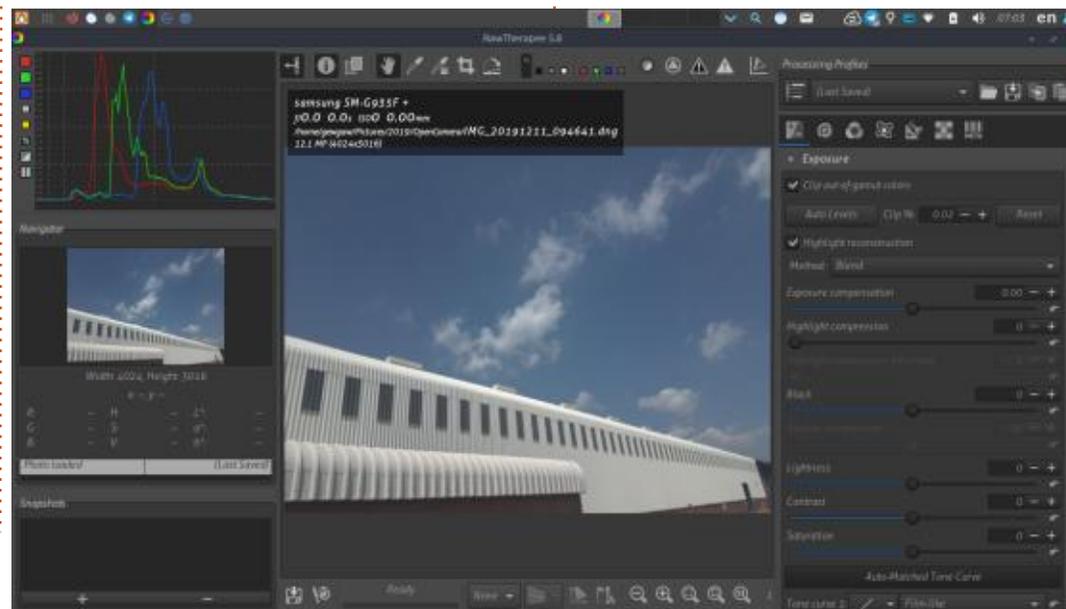
Today, I want to take a simple picture and create a sort of stock photo from it. I want to make a wallpaper for two monitors, or one ultra-wide monitor. I am sure you have seen the windows-7 or windows-8 wallpaper of a building façade and I was hoping to make my own for Ubuntu. You may want

to do this with something containing a repeating pattern, like bricks in a wall. Do not let me stop your creativity. Any pictures we edit from now on will be hosted on the FCM website, so be sure to visit the website and grab a copy if you would like to follow along - or use your own picture. This was one of those moments where my camera was at home, but I realised that I was carrying a camera in my pocket. I cannot vouch for said camera, as it is on a company stand-by mobile phone (I do not own a cellphone and I am not in the market for one), but it is new-ish

and should take a semi-decent picture.

One of the features that I like about Rawtherapee is that you can get an idea of what is happening, color-wise on your photograph. If you move your mouse over your image in the editing window, you will see a crosshair. Now, if you shift your gaze to your histogram, you may notice that your histogram is lifted a few millimetres, and there are three coloured lines below the line. When you move your mouse, you should see the lines move left or right. This is a

great indication of where the red, green and blue for your chosen spot is on the histogram. I find this very handy to distinguish where my colors separate. I know that you get percentages in the navigator window, as you move your mouse, but I prefer to see it move horizontally and get the visual highs and lows bringing the two together in my mind's eye. I say mind's eye, as I am already imagining where I want to go with my picture. Now, in the picture that I am using, I have a lot of different whites and blues. My histogram does not squish up against any of the sides, (yes, this is a technical term... Hahahaha) so there is no need to turn on clipping indicators. Do you remember the shortcut keys?? They are '<' and '>'. Now, if I move my mouse down the side of the building, keeping to the white(-ish) parts, I can see how the white travels along my histogram as it goes further into the distance. This is something I will have to keep in mind when editing. Any edits to this white also differ from the whites in the clouds.



# HOWTO - RAWTHERAPEE

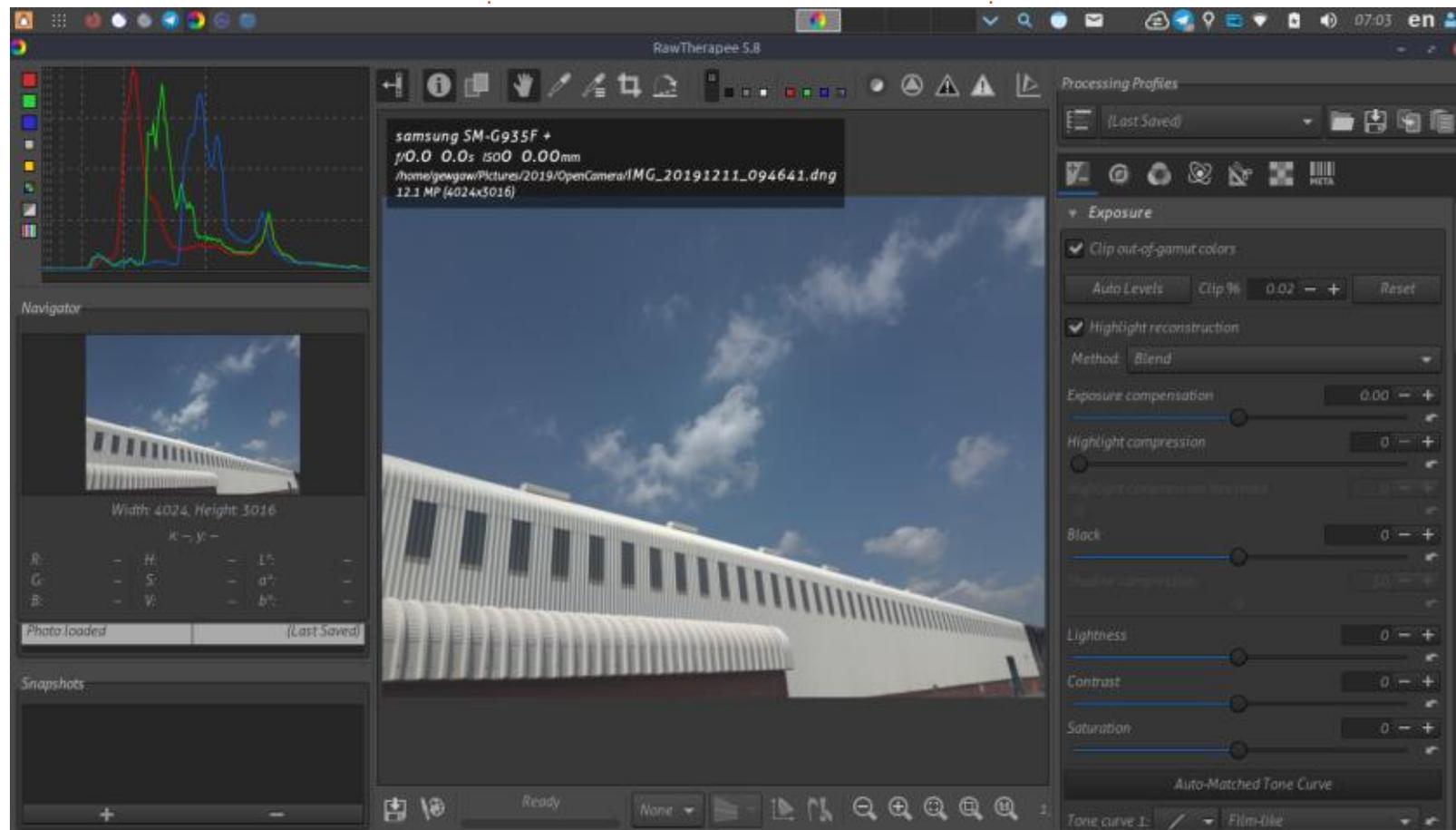
To illustrate what I am talking about, I want you to go to the RAW tab, bonus points if you know which one it is without hovering your mouse over it, and extra credit if you used the shortcut keys. The second entry should be RAW white points. I want you to grab the slider and move it to the right, increasing the white point. Now you can turn on your clipping indicators and you can immediately see when you have gone too far.

Don't worry, you can click the reset button at any time to undo what you have done. It is the little reverse arrow next to the slider on the right. What you may not have noticed immediately, is that the white point also affects other colours in your photograph, so be aware of that. In my picture, I am not too worried as I plan on cropping it to give me a contrast between blue and white. Clipping means loss of detail, so we want to

avoid it unless the area in which we lose the detail is tiny or not important. What I mean by this is that you may have taken a picture to capture corpuscular rays. You stand in the shade and you take a picture into the rising / setting sun – that is behind a tree. The tree moved and you got some sun in. The sun is a blinding white spot and we will be cutting it out of the final picture, so it does not matter if we get clipping there.

The reason I am talking about this is, it is becoming winter now and lots of people are going to be taking pictures in or of the snow. Also, this is the tab that you will see, right at the bottom, the new addition to Rawtherapee version 5.8. The capture sharpening block. We will look at this feature in a future article, but, for now, I want you to note where it is. Today we will get our exposure sorted. As you may have noticed, my histogram has a long straight line on the left. It is not too surprising as there is very little shadow or dark spots in the photograph. Open the exposure tab and we increase our black to where it starts clipping and go two back (2900 by my reckoning). Though I will probably be cutting out the parts where the black is clipping, let us avoid that. I usually aim for less is more, but sometimes the cowboy approach is good for visually stunning pieces.

This is the area I am interested in (more-or-less), but I do not want to crop it yet. Cropping is one of the last steps. Another nifty feature is, that if you went full cowboy and raised your black



## HOWTO - RAWTHERAPEE

above that (my) margin, you can mitigate the clipping by using shadow compression. Since my vision for this picture is minimal colors (white, grey, blue), I am going to focus on only saturation and contrast. It is a lot easier to edit when you know what you want out of your picture. If you are not quite sure, it is also good, as you get to fiddle with “all the knobs”, and that way you learn too! Remember to zoom in often, even

if you have a high dpi monitor. You may find that you have clipping that you do not see on your zoomed out overview.

**TIP:** Adding contrast and saturation to your image, may make it pop, but it also introduces grain. You need to walk the fine line here.

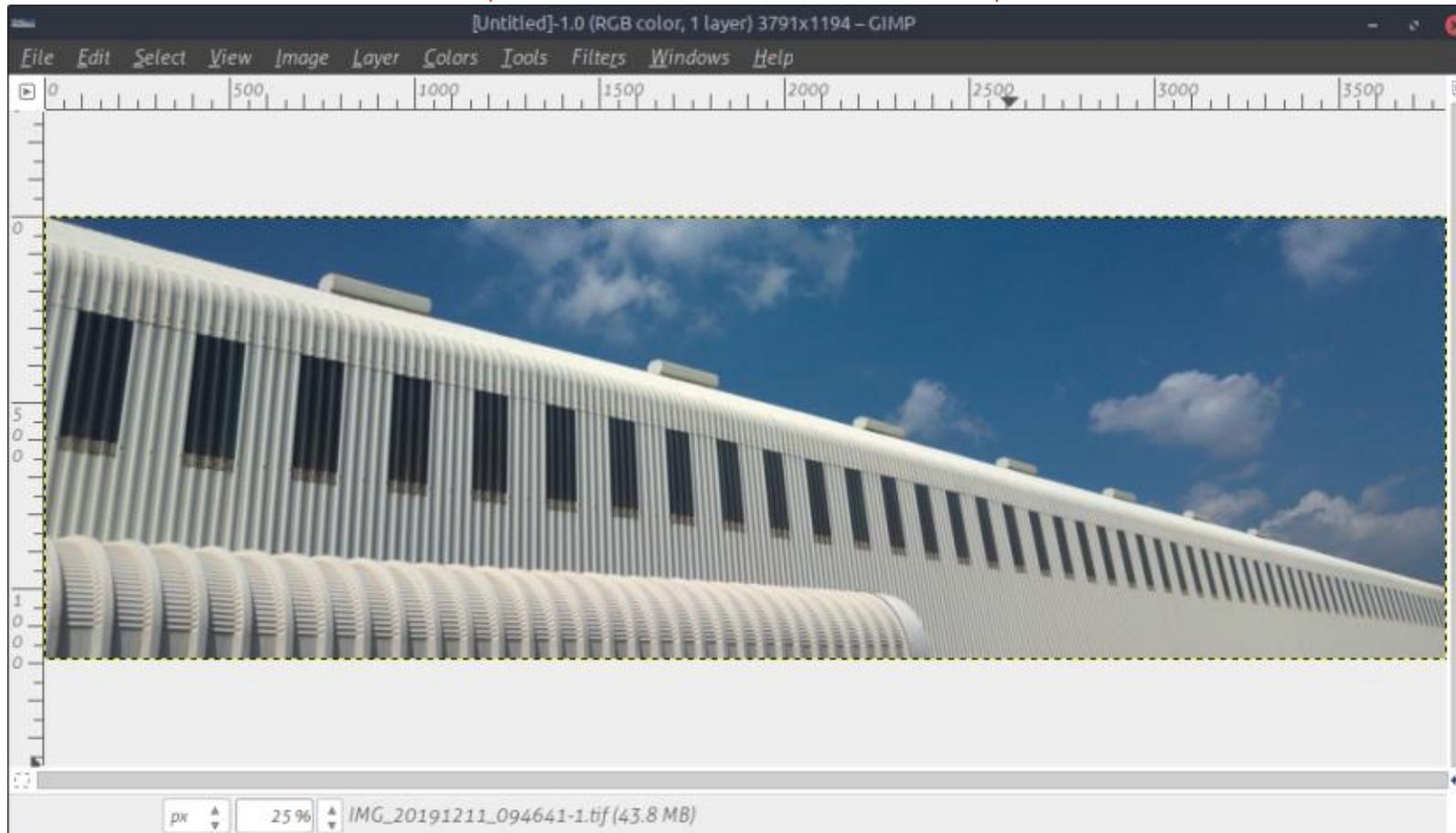
Now to change what we perceive. Go to the shadows and

highlights block and turn it on. I want to bring my “shadows” up just a little. You will notice that the histogram is compressed a little and moved slightly to the right. Not too much, as you will start washing out the blue. I just want to play with the grey. Then, lastly, I will head down to L\*a\*b adjustments and play with chromaticity to make my blue pop before finally cropping it.

I now simply throw it into GIMP with ‘ctrl+e’ and export it as a jpeg and it is ready for my wallpaper.

So now I have my “stock” photo that I will use as wallpaper on an extra wide monitor, or split across two monitors. Next month we can look at more fun ways to use Rawtherapee, maybe even change this picture into something more... who knows?

Obviously there is more we can do when editing, but this was simply to illustrate how to use Rawtherapee to quickly get what you want. I hope this was informative and as always, should you have questions or comments, please email us on: [misc@fullcirclemagazine.org](mailto:misc@fullcirclemagazine.org)



# The Daily Waddle

**I get it... you  
are an Emacs  
master....**





# HOW-TO

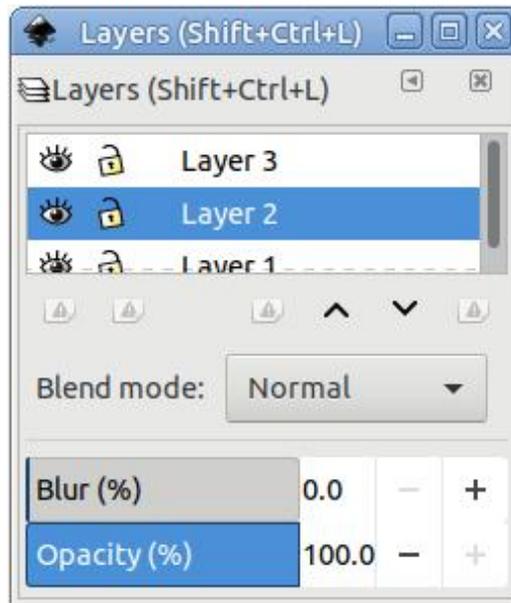
Written by Mark Crutch

Last time we began looking at the new features in Inkscape 1.0, and I suggested that you could install the snap version of the package in order to let it live alongside the deb package version of 0.92.x you may be currently using. It turns out that this was both good advice and bad.

The reason it's a good option is because, as I feared, version 1.0 is proving to contain a number of bugs and regressions that range from slightly annoying to full-scale showstoppers, depending on what you use Inkscape for. In that respect, the ability to still switch back to 0.92 makes using the snap a definite advantage.

The bad news, however, is that there are some packaging issues with the snap which result in incorrect and missing icons. I noted this problem last month, with regard to some symbolic icons appearing in the toolbar when using a non-symbolic icon theme. Since then, however, I've noticed (and reported) several icons that are completely missing from key

parts of the UI. For example, here's the Layers dialog – something that you're likely to use very frequently – missing the icons for adding and deleting layers, and those for moving a layer to the top or bottom of the stack:



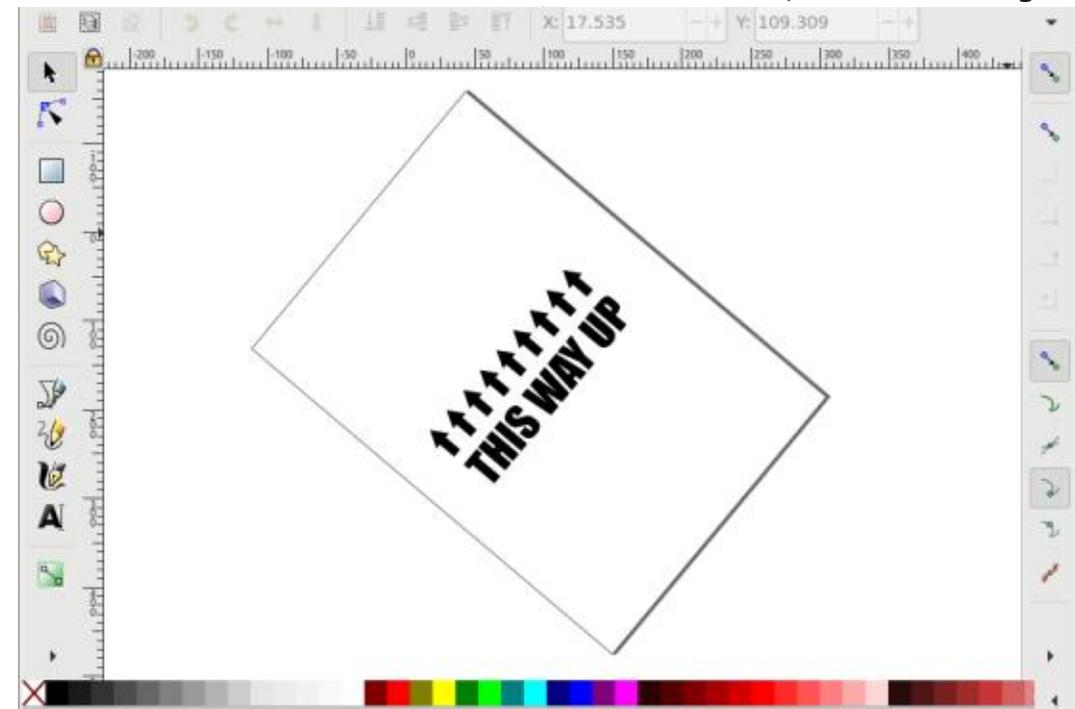
These same icons are used (and therefore absent) in various other parts of the user interface, and there are other missing icons too. Fortunately, the buttons still operate as they should, and the tooltips work, so you can still drive the software. Familiarity with older

# Inkscape - Part 98

versions helps, but if you're new to Inkscape then the 1.0 snap, as it currently stands, may well lead to confusion.

You might think that switching to a different icon theme would help, but all you get is a different 'missing image' icon. Switch to the symbolic icons, however, and they are all present – which at least offers something of a workaround for now, if you don't mind that aesthetic.

There is another option: there's a PPA available for the 1.0 release which does not suffer from this problem (<https://launchpad.net/~inkscape.dev/+archive/ubuntu/stable>). By installing this, however, you'll replace the deb packaged 0.92.x version if you have that installed. This is the approach I'll be taking for the immediate future, so that I can produce screenshots for this series that use the same icons as those in earlier instalments – however I will be running it in a virtual machine, as I'll be sticking



with 0.92 to produce my comic strips until the 1.x series matures a little.

There's more to say about the UI changes in Inkscape 1.0, but, right now, you're probably itching to see what new features there are to help you when actually drawing something.

Let's start with changes to the canvas – the entire drawing area within the Inkscape window – beginning with rotation.

Particularly when drawing freehand, it's useful to be able to rotate the canvas to better suit the range of motion in your arm. Think about using a graphics tablet: it's a lot easier to move the stylus from left to right rather than up and down. Of course this doesn't mean strictly horizontal lines, since your arm traces out an arc. But the general principle remains, which can result in artists trying to perform gymnastics to rotate their tablets – and their heads – in order to improve their accuracy for awkwardly angled lines.

With 1.0, it's now possible to rotate the canvas itself, so you can keep the tablet, and your body, in a

more comfortable position. If you're using a mouse with a wheel, then you can hold Ctrl and Shift while rotating the wheel. Alternatively, hold Ctrl while you click-and-drag with the middle mouse button (which may also be the wheel). The latter is especially useful for tablet users, for whom the middle mouse button is often duplicated as a button on the body of the stylus.

Some users have reported that they find it too easy to accidentally trigger rotation when they actually intended to pan the canvas. Although there's no way to disable rotation completely in this release, it is possible to assign a keyboard shortcut to reset the rotation quickly if you accidentally trigger it. Within the keyboard shortcuts pane of the Inkscape Preferences dialog you can also set shortcuts to rotate the canvas clockwise and counter-clockwise, though none of these functions have default shortcuts assigned.

If you do rotate the canvas, and haven't assigned a keyboard shortcut for resetting it, you still have a couple of options available for returning to the normal orientation. The obvious option is

simply to rotate in the opposite direction but this approach may prove difficult to do precisely. Better is to use a new option in the View menu: View > Canvas Orientation > Reset Rotation.



If you want to precisely set the rotation amount, there's an additional field at the right of the status bar, alongside the previous one for the zoom value. You can, of course, type a value into this field directly. But you can also scroll the mouse wheel over the numbers to change the values in 1° increments – or click the +/- buttons to do the same.

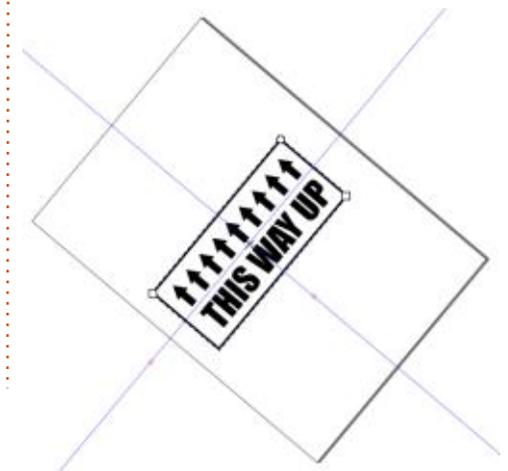
In common with most input boxes in the Inkscape UI, there's a context menu that you can access with a right-click on the field, offering a few standard values, this time in 45° increments. This is another useful way to reset the rotation back to zero.

It's all very well being able to rotate the canvas to whatever amount you want, but what does that actually get you as an artist? Unfortunately, the answer is 'not much'. As I mentioned at the

outset, this is particularly useful for freehand work, using the Bezier, pencil or calligraphy tools. But if you want to use Inkscape's other features, it has a lot less to offer.

I would have thought that the point of being able to rotate the canvas is that it gives you a way to set an angled baseline against which to create other objects. If you need to create a few lines of text, perfectly positioned at an angle of 26.35° then you would surely just punch that value into the field at the right of the status bar, then plough on with the text tool. Except it doesn't work like that.

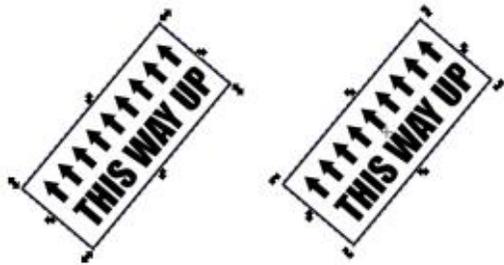
Rotating the canvas just rotates your view of the canvas. Text, rectangles and even guides are still oriented to the page, not to the



## HOWTO - INKSCAPE

new view. Here's my rotated canvas with a rectangle drawn, and a pair of guides dragged out after it had already been rotated:

It gets even odder when you select objects. The handles for the selection box maintain their "normal" orientation – so the scale handle for the top-right of the box still points diagonally from SW to NE, for example. But with my page rotated somewhere near 45°, it results in arrows that are distinctly misleading, both in resize mode and rotate/skew mode:



What would happen if you dragged the vertical arrows in the first example? You might think it would scale the content vertically as you look at it. But instead it scales the objects vertically along the axis of the page, not the axis of the screen.

Canvas rotation feels like a missed opportunity to me. Making

the other tools, and guides, operate relative to the screen, not the page, would result in some very powerful workflows. Instead it's a helpful feature for freehand drawing, but not a lot else.

Another new feature that's closely related to canvas rotation is the ability to flip the canvas vertically and horizontally – not to be confused with flipping individual objects via the toolbar buttons or the H and V keys. The canvas flipping options can be accessed from the View > Canvas Orientation menu, or you can add keyboard shortcuts for them from the Inkscape Preferences dialog (none are assigned by default). They behave pretty much as you would expect, flipping the canvas view either left-to-right, top-to-



bottom, or both (which is equivalent to rotating through 180°). Note that the drop shadow on the nominal bottom-right page border will give you an indication of the current state (if you have it visible, of course).

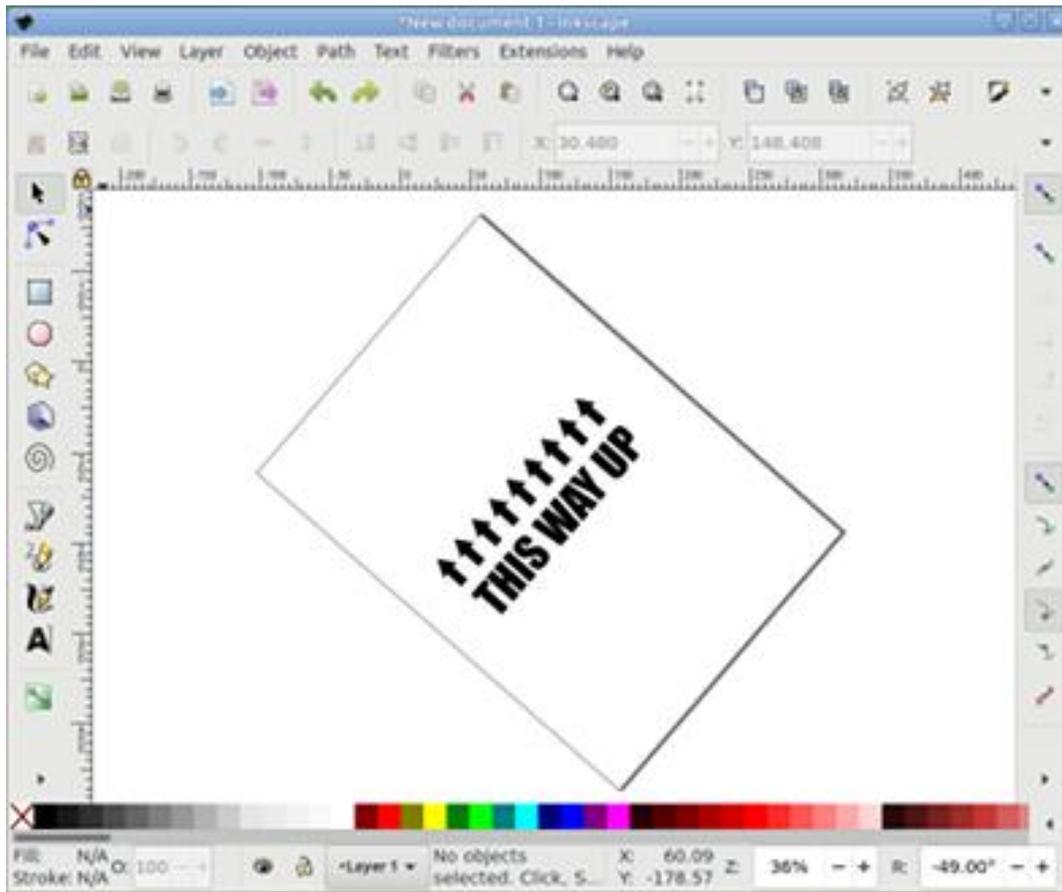
Flipping the canvas is a technique often used by digital artists to get a different view of their work. Sometimes issues in layout or perspective are more obvious in one orientation or another. Simply by making text less legible it can help to expose general design problems without those pesky words vying for your brain's attention at the same time.

Resetting a flipped canvas is done by flipping it a second time in whichever direction(s) are required.

Unless you've set keyboard shortcuts, this potentially means two trips to a nested sub-menu. I'd prefer to see the "Reset rotation" menu entry replaced with a more general "Reset view" option that would not only set the rotation back to zero, but also turn off any horizontal or vertical flipping.

You may be wondering what happens if you apply both canvas rotation and flipping at the same time? The answer is that the rotation is applied first, then the whole viewport is flipped. This is arguably the better ordering for these transformations, as the display switches between two clearly distinct orientations – probably more useful for spotting design problems. For comparison, here's my test page, first rotated and then rotated and flipped horizontally (next page).

One problem that affects all Inkscape users at some time, and novices in particular, is losing your place in a drawing. You've zoomed in, then panned a little too far, and suddenly you're looking at a plain white section of the window with no idea which direction you need to go in to return to your work. With the addition of flipping and

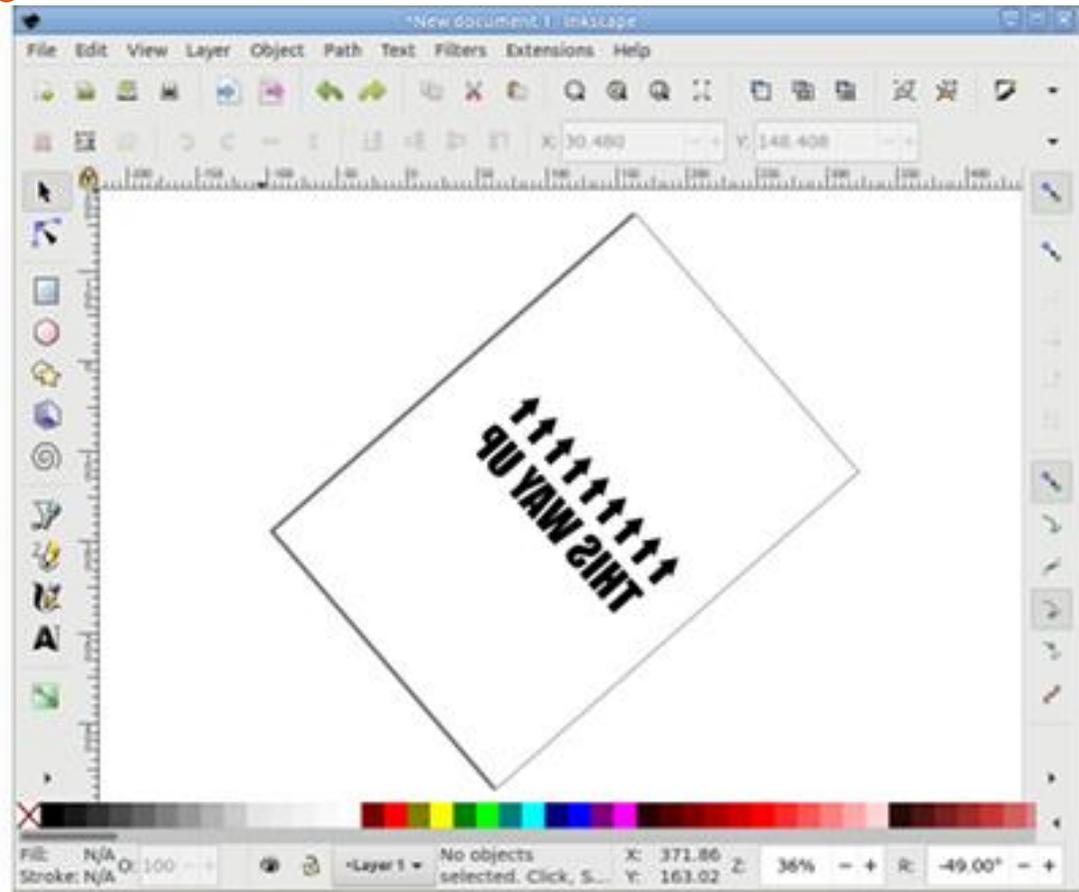


rotating, there's even more likelihood that you may get lost in your own drawing at some time.

Historically you could deal with this situation by zooming out until the canvas was visible in the window, then zooming back in. Or you could use the zoom shortcuts – such as zoom to page – to get back to a known state. But these approaches change your zoom level, which causes Inkscape to re-

render the content, causing a real slowdown on some drawings.

A new addition to the zoom buttons in the toolbar for 1.0 is “Center page in window”. Clicking this, or using the keyboard shortcut (default: Ctrl-4), pans the content of the Inkscape window in order to position the center of the page at the center of the window, without changing the zoom level. This works based on the nominal page



size set in the document properties, regardless of whether or not the page border is visible.



Hopefully you'll find at least one of these new features will be helpful to you. But that's not all for the new canvas and view features in 1.0, so next month we'll continue to look at a few other changes and

additions in this area.



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



# HOW-TO

Written by Alan Ward

## Krita To Rework Old Photos Pt.8

This series is aimed at learning to make something of the old photos in my possession, and others in the public domain due to their age. You, the reader, are welcome to tag along and, I hope, glean some small insight, and perhaps an idea or two from time to time. No promises are made as to quality of the content, or potential errors and omissions. I am a computer scientist, not a true artist or a professional of image restoration. So please take all this as a best effort, but with no firm

guarantees — much as is the case of most open-source software.

In the previous part of this series, we worked on a photograph that had been digitized professionally by the laboratory when our negative film was developed, and presented to us on a CD. At times, however, we no longer have access to this laboratory, or even to the paper prints. In such cases, using a flatbed scanner to digitize the negatives may be a solution.

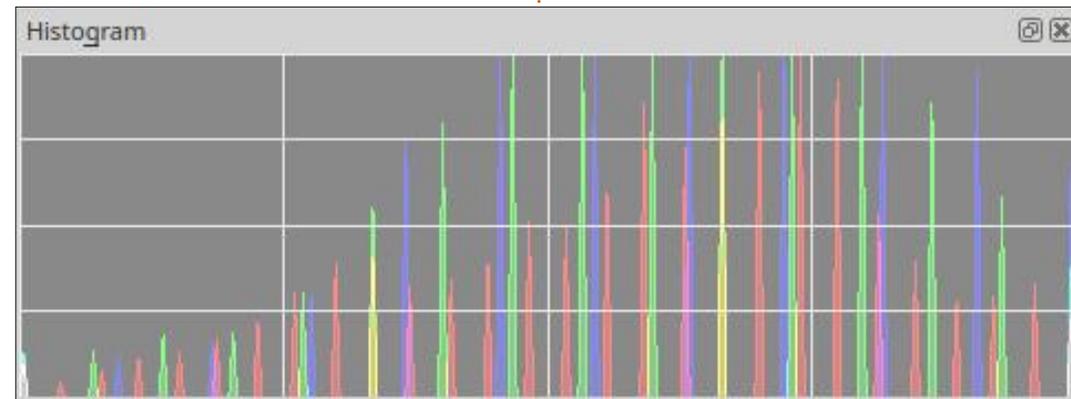
However, it does have its drawbacks, as we will see today with a sample image from my library. This is a photograph that I took way back, on chemical 35mm negative film. The original paper prints have been lost in the mists of time, and all that remains is the film itself. This has been scanned using a flatbed scanner, and then converted to a positive. However, perhaps the film has not been stored in a very clean place, or the scanner itself had some dust inside it; the end result is that our image contains quite a lot of defects.

The dark splotches and lines are dust particles that reflected strongly in the scanner's light source. Also, colors look rather washed out. In fact, when we load

this image into Krita, we can observe that something rather unusual appears in the histogram.

We have not a continuous range in any of the primary colors, but rather spikes regularly spaced across the range. This indicates that the original was scanned using a very low color resolution: just a few bits was used to code each color. When we count the spikes, we see there are about 16 spikes for each primary color, indicating that colors were represented using a 4-bit integer for each color (so 12 bits in total). Compare this to a more usual 8 or 10-bit integer for each color, 24 to 30 bits in total for each pixel.

Before making any alterations



to the image, I started by cloning the complete layer. By working only on the clone, I could always go back to the original, for reference or even to copy over and repair any major errors I may make.

The first action we would need to take is to remove the dark imperfections. To begin, I split the image in halves lengthwise, and will be working only on the right half. This is, so we can see how things progress by comparison with our control image to the left. To remove the dark bits, there are no half-measures we can take: we just

need to paint over them in a color that is correct. Use the dipper tool to select a color from an unaffected part closeby, and then simply paint over the blemish with a standard brush or even an airbrush. I did need to use rather small sizes of brush, to paint only the splotch itself and not the surrounding area. With a bit of application, this is what I obtained. There are still some small blemishes, but nothing that stands out from a distance.

Readers familiar with image processing software may have

come across tools that are usually labeled as “blenders”. The best way of describing their application is that they move around the colors already present in the image, as if we were working with fresh oil paint on a canvas. In some situations, they may be used to solve small defects in an image -- such as a small wart on a fashion model’s otherwise perfect skin, one would imagine. However, they do not add any color, but simply move around what is already there. In this case, since the defects were very much darker than the surrounding image, the use of a blender would simply have ended up enlarging and spreading out the defect instead of disguising it, which is why I preferred not to use any of Krita’s available blenders.

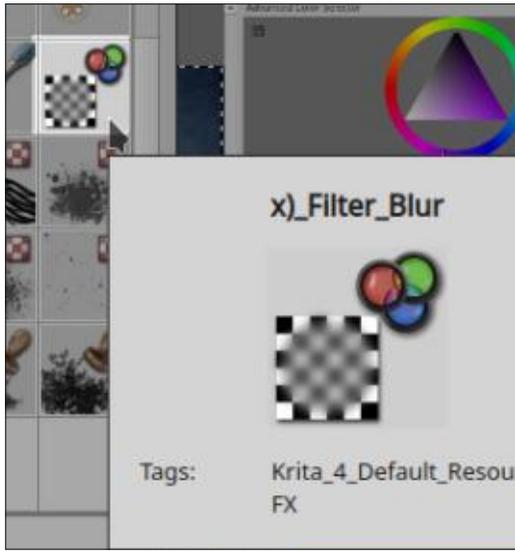
of the brownish grain, especially visible in the vegetation on the background hills, and on the driveway surface. One tool I could have used is the Wave noise reducer we applied in previous parts of this series. Alternatively, I could have blurred the image slightly. But, any action applied to the complete image would have not only removed the grain, but also altered the shape and definition of any straight edges. These obviously need to be preserved, otherwise objects such as the vehicle will no longer seem sharp and in focus.

To solve this conundrum, I selected parts of the image that did not cross any edges and blurred them individually using “Filter”, “Blur”, then “Gaussian blur”. Then, I used one of Krita’s brushes, “Filter blur” (next page. top left), to selectively blur small areas near the edges of objects, but without affecting them. This brush, as usual, may be sized appropriately to alter one small area at a time. For my image, I used sizes 16 pixels down to 5, and applied the brush carefully in small touches.

When the blur was applied to the car’s body, it combined



To continue, I wanted to get rid



different shades of white to create a smoother finish -- but without adding in any black from the windows. When applied to the

railing, I chose a brush size that did not combine the iron railing with the surrounding green vegetation. The rear lights' plastic lens colors have been smoothed out individually, without mixing their colors up.

So far, we have obtained an image that is clearer and looks much nicer than the original, Finally, I gave the colors a bit of a tweak using Krita's "Filter", "Adjust", and "Color balance" tool, though selecting only the right half of the image to preserve the left for comparison. The end result is rather satisfying, if I do say so

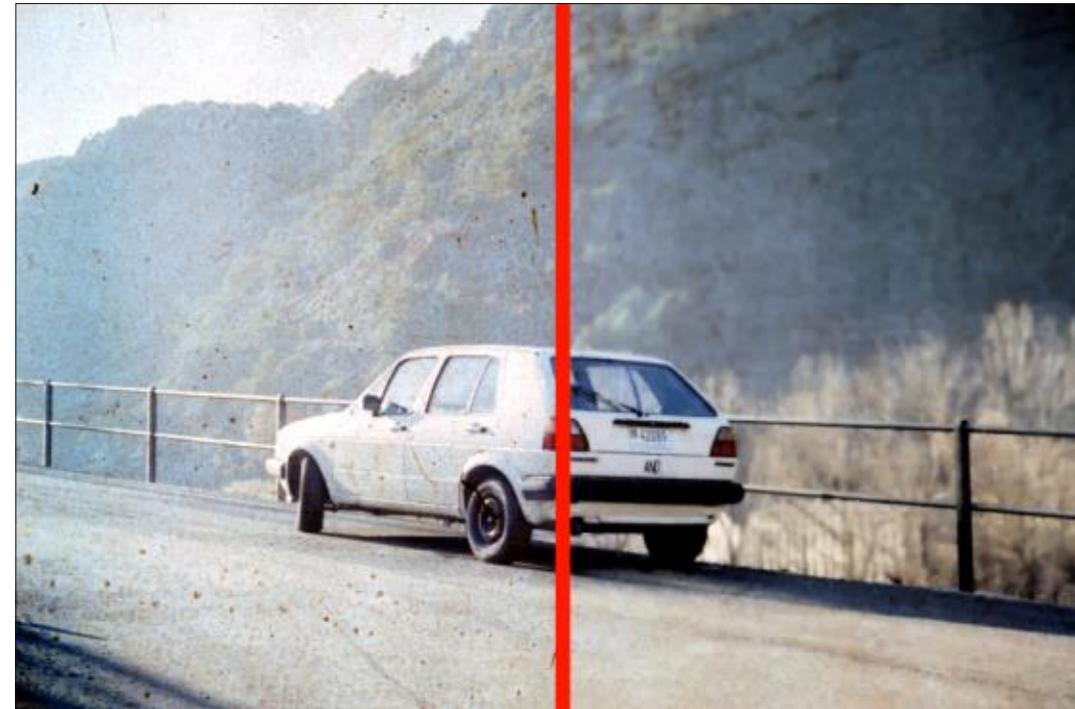
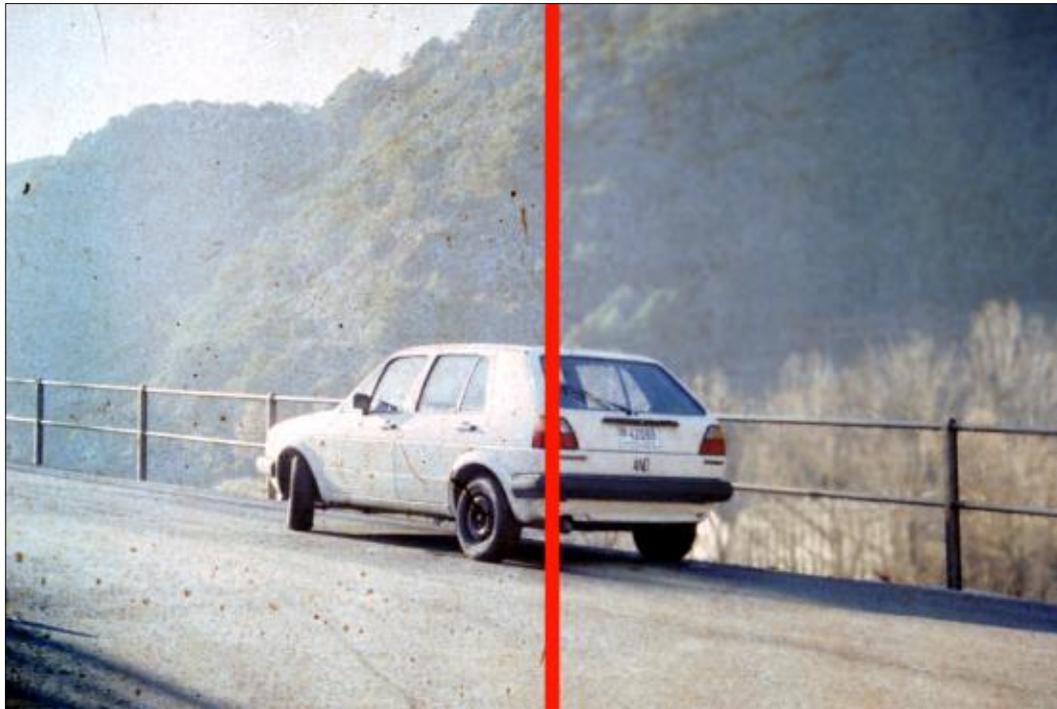
myself. Though not perfect, it is not too bad for a cheap photograph of the early 1990s, and a step up from the negative film's sad state.

So far, in this series, we have been working on originals that started life as traditional photographs taken using negatives and a chemical process. In recent parts, we have centered on originals that have been digitized by some means. However, technology did progress over the years, and at one point during the mid 2000s, digital cameras became mainstream. Not all were created equal, and some of the earliest had

sensors that lacked the quality we are used to today. This is clear in the images they produced, that can also benefit from some tweaking as we will see in the next part of the series. Until then, take care!



**Alan** holds a PhD. He teaches comp sci and eng at Escola Andorrana de Batxillerat. He has given GNU/Linux courses at the Uni of Andorra and taught GNU/Linux systems admin at the OU of Catalunya.



# The Daily Waddle

THE DAILY WADDLE

by: ErikTheUnready



What?

**NO PHISHING**





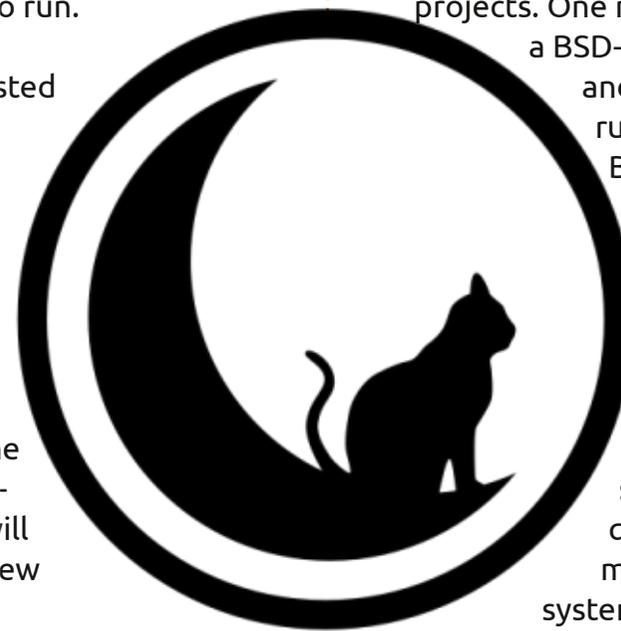
**B**SD is the curse of itself. BSD is a great operating system, however those that hold the keys are letting it die. I agree that BSD is a complete electronic ecosphere. I agree that it is secure. When it works, it works well.

I disagree that it is in reach of every person. Many users drift from Linux into BSD in hopes of finding something new. If I was uploading an OS to an old desktop PC, GhostBSD would be my choice. All of the other BSDs require special hardware, installation skills, or straight up luck, to get it installed. Changing a configuration file is a major barrier for new users. BSD is dying. Even hardcore BSD developers are drifting into Linux due to the slow proactive changes from within the BSD community.

I could not get MidnightBSD or the remaining BSDs installed in a virtual machine. I installed over 30 different Linux distros in the last 5 years, yet I successfully installed only 2 BSD variants in the last year. And I still had issues with those 2 variants post install, when getting

my WiFi card to run.

I am interested where Project Trident and Hyperbole are going in the coming days. I hope these 2 projects will mature and stabilize for the daily user. In 6-12 months, I will do a basic review of these 2



projects. One running towards a BSD-like Linux code, and the other running into a BSD kernel.

The one thing that I loved about BSD is the ZFS file management system. ZFS is a quite stable file management system, over 12 years

in the making. I will go back to my traditional Linux Loopback format and review ZFS and the OpenZFS project.

And yes, BSD did make me crazy.



# OpenZFS



**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.



The time has finally come. After struggling mightily to get modern PIM technology working on my antique steam-powered Ubuntu 16.10 rig, the end was finally in sight. I was already having hardware issues on my ancient Fujitsu T4215 convertible tablet/laptop, with the keyboard having birdseed under the keys and jamming frequently, thanks to my cockatiel's sloppy eating habits and frequent proximity to the computer.

In addition, the sound punked out on me a few months back for some inexplicable reason. The system is dual-boot with Windows 10, and the sound doesn't work on the Windows side, either, so it's evidently a hardware issue. I put on external speakers and soldiered on for a while, but the end was clearly approaching. Then, my main Windows laptop's hard drive started to fail. Since I was going to need to buy a new hard drive for it, I decided to buy two and install one to my spare parts T4215 (which had no drive). This was obviously a good time to install a fresh copy of

Ubuntu, and since version 20.04 LTS just dropped recently, so much the better.

So, it's time for a 'soft reboot' of Everyday Ubuntu, as we go through setting up the 'new' machine, transferring data from the old machine, and learning more about the GNOME interface, since Unity has now fallen by the wayside for the main Ubuntu distribution. I'm pretty used to Unity, but Unity was developed from GNOME (and I have used it on Ubuntu previously), so the adjustment shouldn't be that seismic.

## GETTING THINGS SORTED – ADJUSTING SLEEP MODE

We'll skip over the initial installation, as there are myriad Ubuntu installation guides available online and it really is pretty straightforward. There are a lot of things I like to do immediately after installation in terms of initial setup of the system, though, so let's consider a few of those.

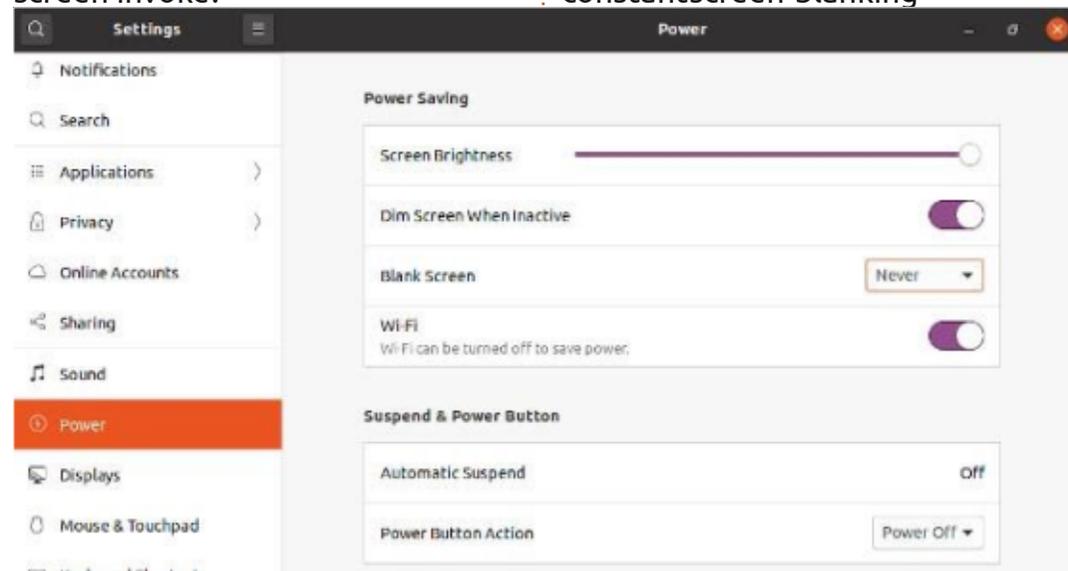
First and foremost, it drives me nuts when I'm doing initial setup that the system defaults to going into idle/sleep mode after such a short period of time. I have never understood why operating systems all seem to default to requiring either constant, non-stop activity, or sleep. I don't think most people use their computers in a way that's conducive to that. Maybe a lot of corporate IT departments prefer this, and maybe that's why every OS I've ever used does it, but can't I at least stop for 5 minutes without having the screensaver or lock screen invoke?

Well, it is what it is. Easy enough to fix. Go to the upper right of the screen and hit the downward-pointing triangle, then click Settings:



Select Power on the left, then select 'Never' from the 'Blank Screen' drop-down (shown below)

Now we can work without the constantscreen-blanking



interruptions.

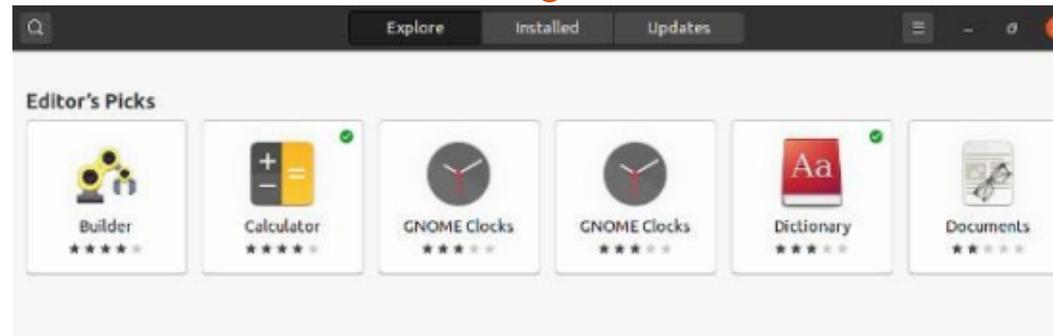
## UBUNTU SOFTWARE CENTER

The next thing I wanted to do was to install what I consider the 'essential' software that I use regularly. So, I fired up the old Ubuntu Software Center from the Favorites (Launcher) on the left side of the screen.

The software center is the icon that looks like a red briefcase or shopping bag with an A on it:

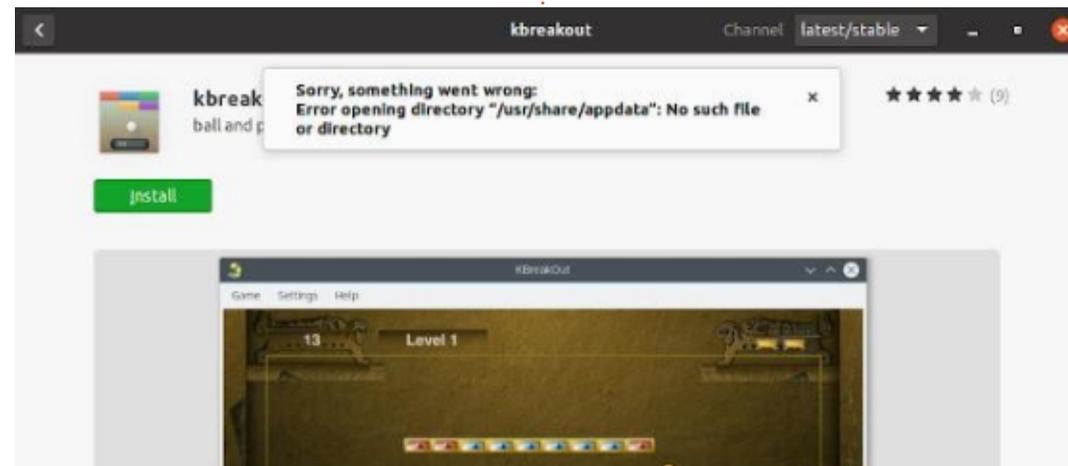


You can select from the Editor's Picks, or go to one of the categories and choose the application you want to install, then click the green 'Install' button.



Now, I really do like the fact that the Software Center gives you a nice, well-designed catalogue with some decent information on most of the programs listed, and it also gives you an intuitive GUI interface for software management. However (as shown below), I ran into many, many error messages while installing software, that required frequent reboots and relaunching of the software center to resolve.

Additionally, many of the



installs that were tiny (less than 1 MB to download) would start and seemingly NEVER complete, nor even generate an error. Eventually, I'd pull up the page for the application and hit 'Cancel', at which point it would ask for my login password and complete, then any other pending installations that were stalled would proceed. I don't know what was causing this, but the Ubuntu installation was brand new and about as clean as was possible. I really hope they fix this.

Additionally, after some of the repeated reboots, the software catalogue did not seem to fully load. It would show the Editor's Picks (shown above) at the top, but none of the categories.

Sometimes a generic search like 'game' would pull up a list of games, sometimes not. After some online research, it seems that this

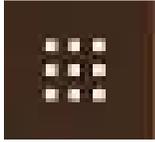
could be resolved by either going to the Update section (top of screen) then hitting the 'Refresh' icon on the upper left, or by invoking the terminal and using the command line:

```
sudo apt-get update && sudo apt-get upgrade
```

The '&&' characters in the middle of the command signify to Linux that you are executing two commands in one command string. Sudo stands for 'Super User DO', and is used when you are not logged in as an administrator, but need to do administrator level functions, like installations and system software updates. These paired commands seemed to usually do the trick to get the catalogues in the Software Center to load properly, although a follow-up reboot was frequently required.

But wait a minute – how did we get to the terminal to type in the command? You have to invoke the Linux terminal in order to type in commands at the CLI, or Command Line Interface. It's a lot like the MS-DOS prompt on a modern-day Windows installation. However, there wasn't a terminal icon on the

Launcher immediately after installing Ubuntu, nor did it show up in the Show Applications list (that's the unmoving set of white squares at the bottom of the Launcher):



## ADDING ITEMS TO THE LAUNCHER/FAVORITES

Well, first we have to find the terminal. At the top of the screen, click on Activities.

In the box that says 'Type to Search', type in term. This should be sufficient to bring up the Terminal icon. Right-click and select Add to Favorites. This will add an icon for Terminal to the Launcher (and since I use the command-line frequently, this is absolutely key for me). I'm a little surprised that the terminal is not in the Favorites by default, like it used to be. Again, though, not hard to fix. NOW we can open Terminal and use our update and upgrade commands to resolve our Ubuntu Software Center issues.



**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.



# The Daily Waddle

**Capetownians say: Oh the water is lovely, its 13 degrees.... That's not a temperature, thats a mathematical angle!!!**





# MY OPINION

Written by John Eddie Kerr

## Is Fossal A Game Changer?

The reviews of Focal Fossa were impressive, many remarking on improved higher speed. OMG! Ubuntu reported on the work that went into the new version to make it run faster. As happy as I am with 18.04, the reviews of 20.04 gave me the nudge I needed to test the latest version. The improved speed was quite obvious to me on my first test of the distro running off of the USB drive and so I installed it onto my laptop.

My laptop is an eight-and-a-half-year-old Lenovo T420 with the following specs:

- ThinkPad-T420 3.7 GiB
- Intel Core i5-2520M CPU @ 2.5GHz x4
- Intel HD Graphics 3000 (SNB GT2)
- Ubuntu 20.04 LTS
- Screen Resolution: 1366 x 768
- Build Date: September 2011

This computer is running quite well on Ubuntu 20.04; it is lacking nothing performance wise, and gives me no reason to consider a lightweight distro such as Xubuntu or Mate. I like both of those desktops; up until now I have been

using Mate at home and at work.

If we make lightweight distros for older equipment, then how far back do we have to go now? My almost nine-year-old Lenovo is running just fine with the recently tweaked Ubuntu. As time goes on, the older computers eventually break and have to be replaced with newer and, of course, more powerful equipment. The 32-bit distro is dying off because there is so little hardware left to run it on.

Linux has diversity going for it, we have lots to choose from in

desktop environments, and I hope that the diversity continues. I like Mate and Xubuntu; a patron in my library took one look at the Mate desktop on my screen and was very impressed with the professional appearance of Mate.

I am not saying the other desktop environments are no longer needed, or wanted, but the tweaking of Linux for older computer hardware may not be as necessary anymore and that could give our coders new outlets for their skills and creativity.

Linux use was given a boost when the hardware that could easily run it was appearing on the curb after people bought new computers. At this point, most of the Windows 7 based hardware is strong enough to run the current release of Ubuntu. We may have reached a similar point in the history of Linux.



**John Eddie Kerr** is a law Librarian at the Wellington Law Association Library in Guelph, Ontario, Canada. He uses Linux and LaTeX at his library.



# HOW-TO

Written by Ronnie Tucker

# Write For Full Circle Magazine

## GUIDELINES

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

## RULES

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

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

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

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

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

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

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

When you are ready to submit your article please email it to: [articles@fullcirclemagazine.org](mailto:articles@fullcirclemagazine.org)

## TRANSLATIONS

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

## REVIEWS

### GAMES/APPLICATIONS

When reviewing games/applications please state clearly:

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

### HARDWARE

When reviewing hardware please state clearly:

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

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



I have been doing reviews of Ubuntu since 2007, Xubuntu since 2009 and Lubuntu since 2010. But the Ubuntu universe is a big place these days, with ten different official and community distributions, plus dozens of unofficial ones. One that I have never had the opportunity to try out until now is Kubuntu, Ubuntu's KDE-based flavor.

At 15 years old, Kubuntu is a very mature distribution. It was first proposed by Canonical employee, Andreas Mueller, on 10 December, 2004, at the Ubuntu Conference in Mataró, Spain. Based on the reputation of the KDE community, Kubuntu immediately gained Mark Shuttleworth's approval as the first variant of Ubuntu. The first version was Kubuntu 5.04 Hoary Hedgehog, released on 8 April, 2005, just six months after the first release of Ubuntu.

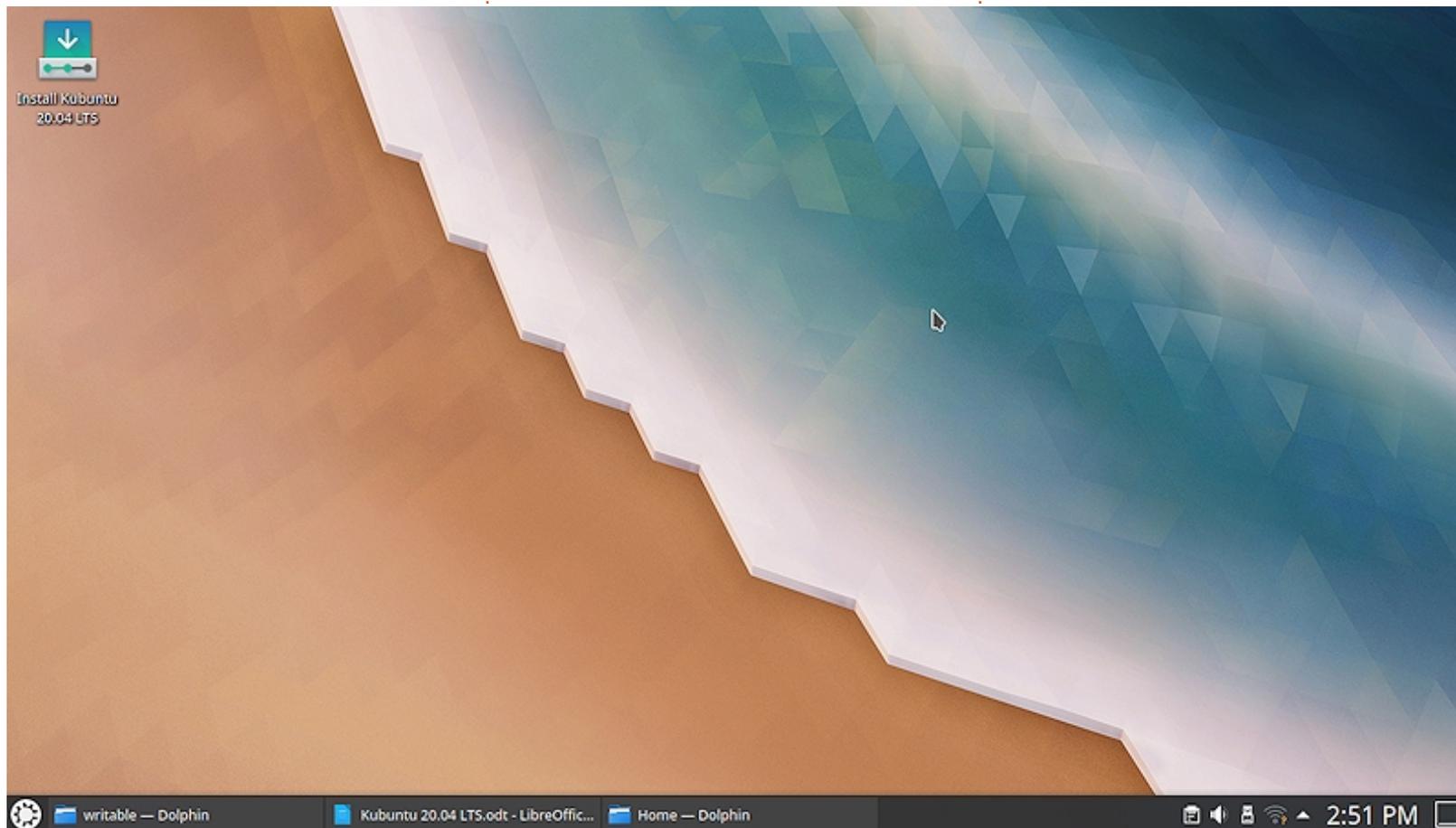
After being sponsored for many years by Canonical and then Blue Systems, today Kubuntu is a community-driven project.

In the African Bemba language Kubuntu translates as "towards humanity". The 20.04 LTS release also has an African connection, being codenamed "Focal Fossa" after the small cat-like carnivore from Madagascar.

Kubuntu Long Term Support (LTS) releases are supported for three years, so users can run Kubuntu 20.04 LTS until April 2023, although I am sure that many will upgrade to the next LTS, due out in April 2022.

Kubuntu has always used the Qt

toolkit-based KDE desktop, but, over the last 15 years, KDE has evolved a lot. The first version of Kubuntu used KDE 3.4. Kubuntu 8.10 brought KDE 4, which became known as the KDE Software Compilation 4.5 in Kubuntu 10.10. KDE Plasma 5 was introduced as a "preview" in Kubuntu 14.10 and



# REVIEW

became the default desktop in 15.04. Over the past ten releases, since Plasma 5 was introduced, it has been incrementally improved and 20.04 LTS features Plasma 5.18.

Kubuntu recommends hardware with a minimum dual-core 2 GHz processor, 4 GB of RAM, and VGA video of at least 1024 x 768 pixels. Users can upgrade to Kubuntu 20.04 LTS from 19.10 or from the last LTS, 18.04, or they can do a fresh installation from a DVD or USB stick.

## BOOTING IT UP

I made up a Kubuntu USB

installer using the Startup Disk Creator. As with the other Ubuntu flavors, booting from the USB stick now results in an automatic file system check, which is a good idea to ensure your stick is error-free.

Once Kubuntu 20.04 LTS boots up, it shows a rather striking default jagged ice and earth wallpaper called "Next". The included wallpaper selection gives 27 choices, all of which are quite beautiful. The Desktop Folder Settings also offers plain color desktops, a slide show, "picture of the day", downloadable wallpaper plug-ins, or you can always use your own wallpaper. This sets the tone for Kubuntu in general, as it is highly configurable in all respects.

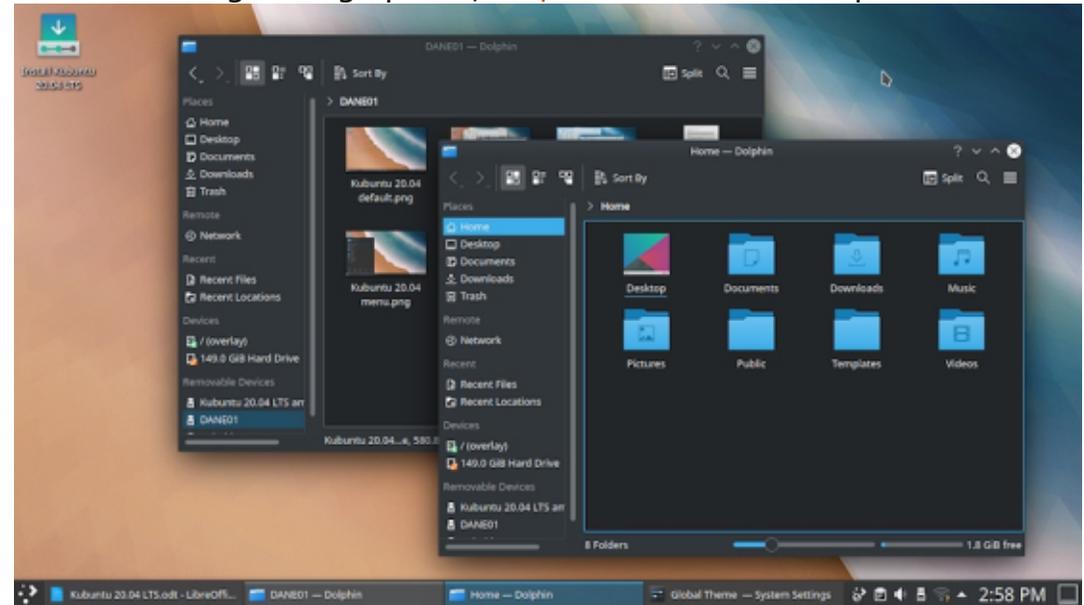
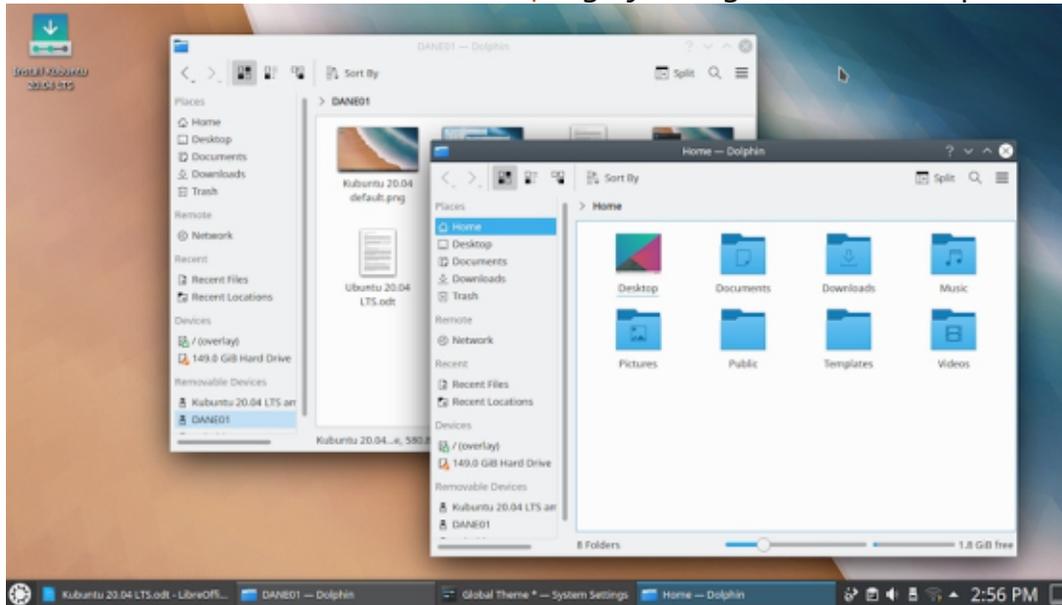
This is markedly different from Ubuntu these days, which has much more limited customization. Kubuntu first and foremost feels like a distribution that is designed by developers for their own use.

Computer desktops these days basically have two paradigms; they are either launcher-based, or menu-based. Ubuntu uses a launcher, while Lubuntu, Xubuntu and Kubuntu use a menu.

The Kubuntu menu opens showing "favorites" and recently used applications. It then has sub-menus for "applications", "computer", "history" and "leave". The "applications" menu has sub-menus for things like "graphics",

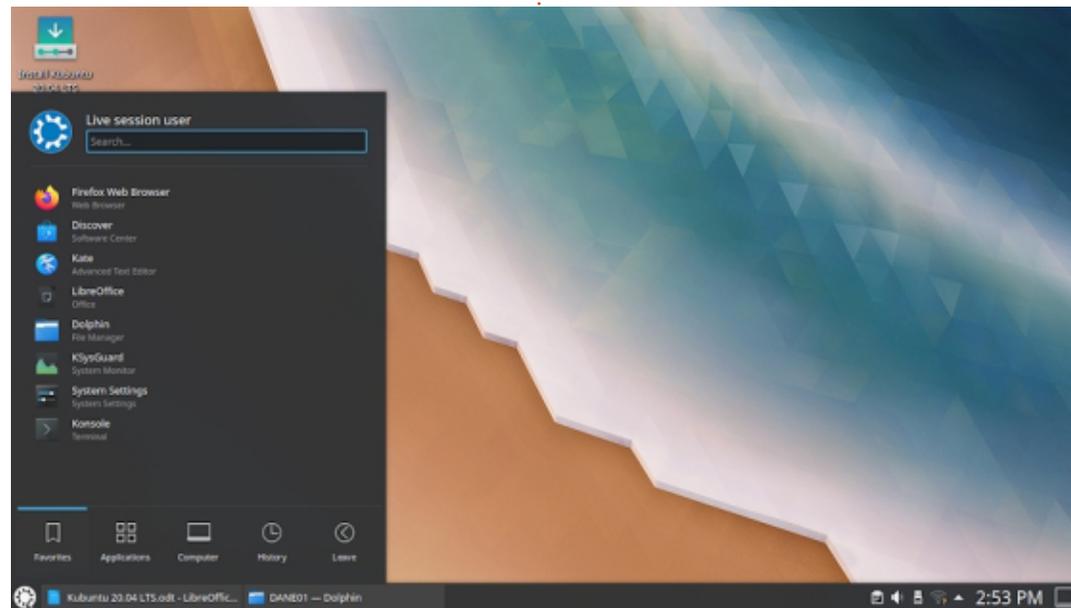
"internet" and "office", and then sometimes sub-sub-menus, too. Overall, it works like Lubuntu's single menu or the Whisker menu found in Xubuntu, but because each level requires a click, it works more slowly and feels more cumbersome to use. I am sure most users find what they are looking for on the initial "favorites" 90% of the time, which is fast to access. The items on the "favorites" menu can be manually rearranged, removed from the menu, or added to the bottom panel.

It is worth noting that there are desktop widgets that can be installed to replace the menu, such as the Application Dashboard, which adds a desktop icon that



opens a fullscreen menu as an alternative, providing functionality very similar to the fullscreen Ubuntu application menu.

Resizing or dragging windows on the desktop by default results in them going about 50% transparent while being moved, which I quickly found annoying. Being highly configurable, this was easy to turn off at System Settings > Workspace Behavior > Desktop Effects. In fact, the desktop effects have a staggering number of settings available. Just reading through the menus reinforces the idea that Kubuntu is probably the most customizable flavor in the Ubuntu universe, a true embarrassment of riches.



## WHAT'S NEW

LTS releases tend to focus on stability rather than new features, but this one does bring one new default application, the Elisa music player. It replaces Cantata, which was used up until now.

## APPLICATIONS

In general, Kubuntu has its own unique suite of Qt-based applications for the KDE desktop including the Qt version of LibreOffice. The one exception to this scheme is the use of the GTK toolkit-based Firefox web browser. There is a Qt-based browser,

Falkon, and perhaps one day it will mature to the point of being ready to replace Firefox on the Qt desktop, but it is not quite there yet.

Some of the applications included in Kubuntu 20.04 LTS are:

- Ark 19.12.3 – archive manager
- Discover 2.12 – software center
- Dolphin 20.04.1 – file manager
- Elisa 19.12.3 – music player
- Emoji picker – emoji manager
- Firefox 75.0 – web browser
- Gwenview 19.12.3 – image viewer
- Kate 19.12.3 – text editor
- Kcalc 19.12.3 – calculator
- KDE Partition Manager 4.1.0 – partition formatting
- Konsole 19.12.3 – terminal emulator
- Kmahjongg 19.12.3 – game
- Kmines 19.12.3 – game
- Konversation 1.7.5 – IRC client
- Kpat 19.12.3 – game
- Ksudoku 19.12.3 – game
- KSysGuard 5.18.4 – system monitor
- Ktorrent 5.1.2 – bit torrent client
- LibreOffice 6.4.2.2 – complete office suite, less only LibreOffice Base database
- Muon 5.8.0 – package manager
- Okluar 19.12.3 – PDF document viewer
- PulseAudio 13.99.1 – audio controller

Skanlite 2.1.0.1 – scanning utility  
Spectacle 0.25 – screenshot tool  
Startup Disk Creator 0.3.7 – USB ISO writer  
Thunderbird 68.7.0 – email client  
VLC 3.0.9.2 – media player

It is interesting to note that, like Ubuntu, Kubuntu 20.04 LTS does not include a CD/DVD burning application by default. This seems sensible in 2020, as neither laptops nor desktop computers have come equipped with optical drives for many years, and CDs and DVDs are getting hard to find. If users install Kubuntu on a computer that has an optical drive, the KDE standard CD/DVD burner, K3B, can always be installed from the repositories using Discover, Muon or the command-line.

By default, Kubuntu 20.04 LTS also does not come with a webcam application, an image editor, or video editor, although there are several of each available in the repositories, if needed.

The Dolphin file manager works well and includes easy bulk file renaming, just select two or more files and hit “F2”.

The Kate text editor is simple,

# REVIEW

but includes highly customizable syntax highlighting, of course, plus automatic spell-checking.

There are some inconsistencies in how applications work in Kubuntu. For instance, the native KDE applications, like the Dolphin file manager, have “global menus” that open on the top panel. LibreOffice and Firefox do not, however, and their menus are at the top of their windows instead.

## SETTINGS AND THEMES

As noted, Kubuntu offers a wide range of customization, probably more than any other Ubuntu-based operating system. Almost anything can be configured or changed on this distro.

Most of the customization is found under “System Settings”, including six different window color themes. Two of these are the obligatory dark themes which are so much in vogue these days. Most of the windowing themes are well thought out and at least make it clear which windows are active and inactive.

By default, Kubuntu has two

panels, one at the top to show the global menu and one at the bottom with the main menu “gear” button, open applications, and status icons. Panels can also be placed on the sides, instead of, or in addition to, those at the top and bottom.

Kubuntu features desktop widgets, devices that can be added for extra functionality, such as an analog clock, full screen application menu, CPU monitor, weather reports, activity managers, and even comic strips. Again, this all allows for a high degree of personalization.

Application launchers can be added to a panel as well to make

them quicker to access. This is done by finding them on the main menu, right-clicking, and selecting “add to panel (widget)”. Removing them requires right-clicking on the panel, edit panel, and then hovering over the icon to be removed and selecting “remove”.

## TESTING

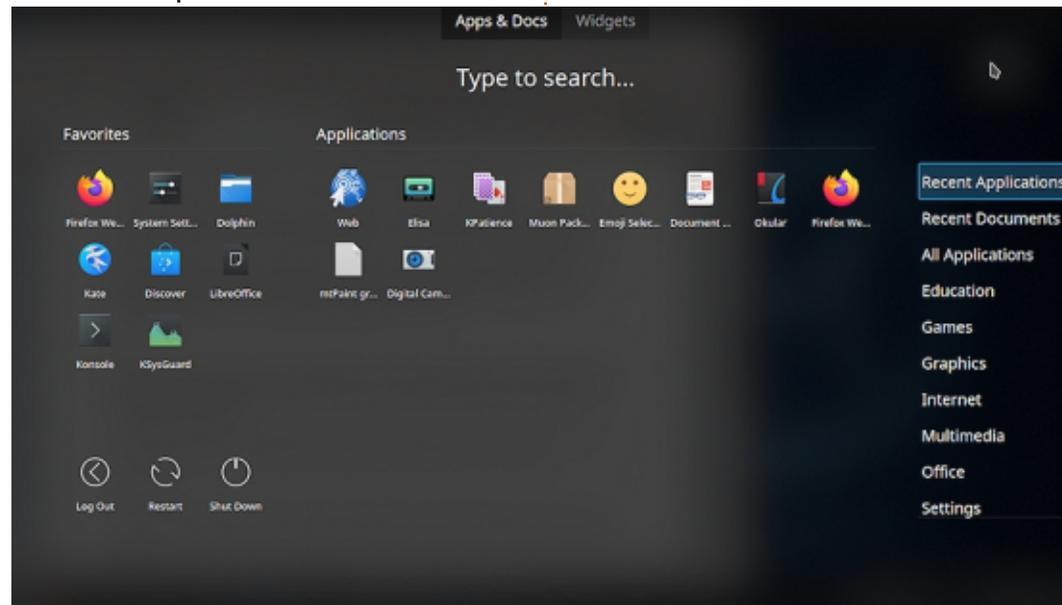
In daily use, Kubuntu 20.04 LTS is quick to figure out and easy to use. The main menu takes a bit of getting used to, but, with some practice, it works well enough, particularly since most commonly-used applications will quickly end up on the favorites menu, which is the first displayed on opening.

I installed the Application Dashboard widget as an alternative to the main menu, and found that it is actually faster and easier to use, basically a complete alternative menu system.

## CONCLUSIONS

Considering that this is the 31st release of Kubuntu, and the tenth since Plasma 5 was introduced, it really is a very polished and mature Linux distribution, with very little need for improvement.

Where Kubuntu really differs from the other Ubuntu flavors is in its wide choices for user customization. Almost anything in Kubuntu can be changed to get it looking and working the way you want. Perhaps the biggest challenge is to make good notes so that you can duplicate your favorite set-up for any future fresh installation.



**Adam Hunt** started using Ubuntu in 2007 and has used Lubuntu since 2010. He lives in Ottawa, Ontario, Canada, in a house with no Windows.



# REVIEW

Written by Adam Hunt

# Xubuntu 20.04

Ubuntu family Long Term Support (LTS) releases are often eagerly awaited by users, but reviewers often rate them as lackluster or boring.

Because the Ubuntu development cycle has three “standard” releases in between the LTS releases, the standard releases are often used as testing grounds for new software and new ideas. This means that the first release after an LTS release is often the most innovative. The next two releases commonly focus on refining the new features, and that process results in an LTS that is first and foremost “stable”, but often not a lot different from the last “standard” release. For most users who transition from one LTS to the next one, two years later, the result is usually refined, stable, boring software that they can use to get work done. That is a good thing!

Xubuntu 20.04 LTS was released on 23 April, 2020, and is the 29th version of Xubuntu.

The major change in this two-

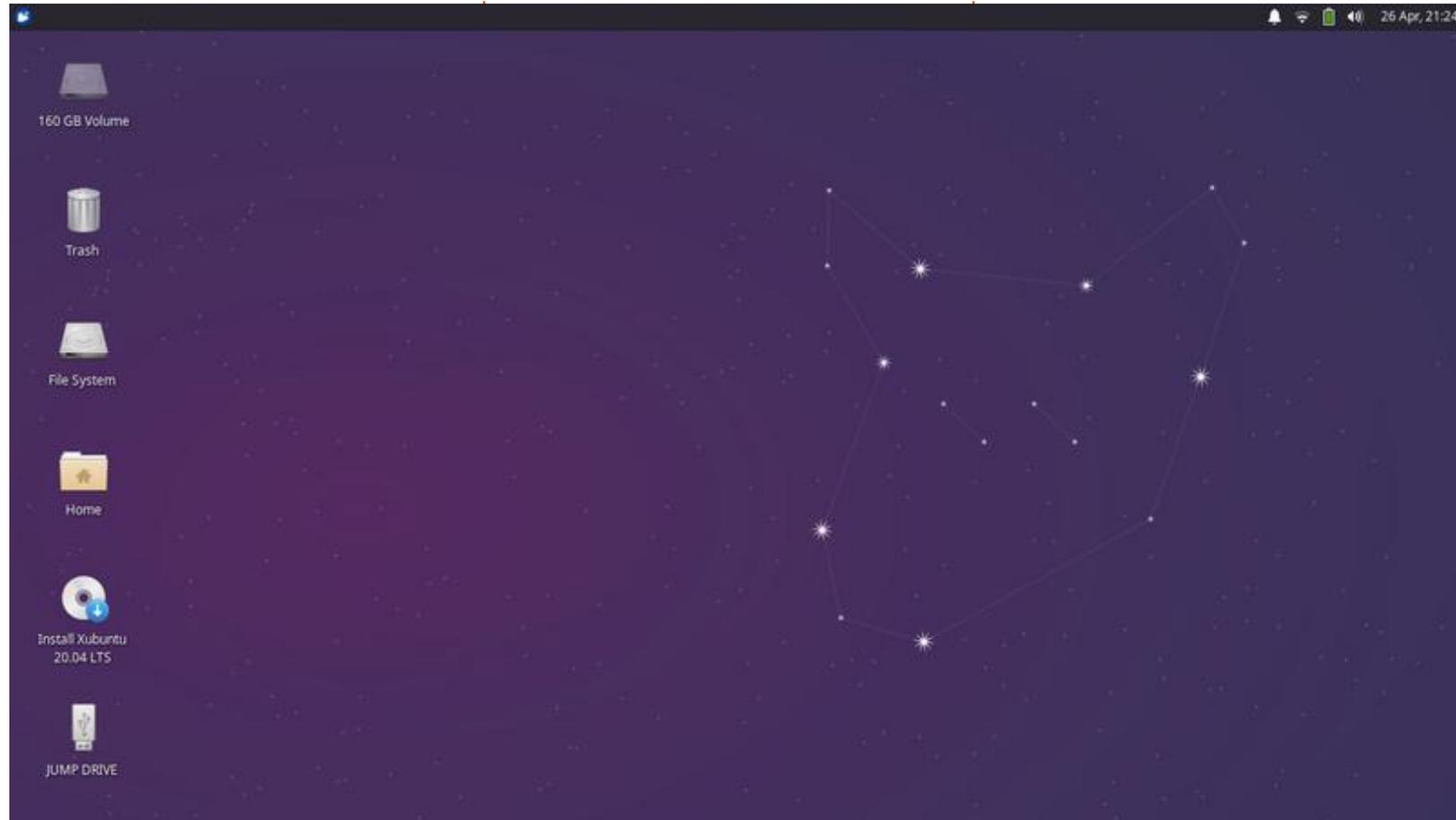
year development cycle was the adoption of version 4.14 of the Xfce desktop, which has been under development for five years. It first appeared in Xubuntu 19.10 and, even though it has moved to the GTK3 toolkit, it will be an easy transition for users, as most of the changes are behind-the-scenes.

## WHAT'S NEW

From a user point of view, there are only small differences between 20.04 LTS and the previous release, 19.10.

All the Ubuntu family of 20.04

LTS releases include automatic testing when booting up the installation media. Previously, the test was optional and had to be manually selected. Making it automatic is a good move, as it should result in more reliable installations. The automatic test can be canceled, but do yourself a



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favor and let it run!

New for Xubuntu 20.04 LTS is desktop scaling, allowing a user to make everything bigger or smaller. The bad news is that it has only two settings: 1X (normal), and 2X (too big). Most people who need desktop scaling will want more subtle values, like 110% or 125%.

This release also includes new themes, wallpaper, and some updated applications. The window themes also now work with snap and flatpak applications, making them feel more like native applications on the desktop.

## APPLICATIONS

Some of the applications included with Xubuntu 20.04 LTS are:

- Atril 1.24.0 PDF viewer
- CUPS 2.3.1 printing system
- Catfish 1.4.13 desktop search
- Firefox 75.0 web browser
- GIMP 2.10.18 graphics editor
- Gnome Software 3.36 package management system
- Gparted 1.0.0 partition editor
- LibreOffice 6.4.2 office suite
- Mousepad 0.4.2 text editor\*
- Parole 1.0.5 media player
- Pidgin 2.13.0 IRC client\*
- PulseAudio 13.99.1 audio controller
- Ristretto 0.10.0 image viewer\*
- Simple Scan 3.36 scanning (re-

badged by Gnome as "Document Scanner")

- Software Updater 20.04.1 (update-manager) software update manager
- Startup Disk Creator 0.3.7 (usb-creator) USB ISO writer\*
- Thunar 1.8.14 file manager
- Thunderbird 68.7.0 email client
- Transmission 2.94-2 bittorrent client\*
- Wget 1.20.3 command-line webpage downloader\*
- Xfburn 0.6.2 CD/DVD burner
- Xfce4 Panel 4.14.3 desktop panel
- Xfce4 Power Manager 1.6.6 system power manager

\* indicates same application version as used in Xubuntu 19.10.

Xubuntu 20.04 LTS, like other recent Xubuntu releases, does not include a webcam application, although Gvvcview or Cheese can be easily installed from the repositories.

## FEATURES

All Xubuntu releases since 14.04 LTS have used the Whisker menu, including 20.04 LTS. Whisker launches all installed applications, starting with a "favorites" list. Other, less-used applications are quickly found on the sub-menus. Whisker also has buttons for logging out, reboot, shutdown, and screen locking. It is unique among Linux menus, as it can be easily



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customized and even resized by dragging. The only function it doesn't offer is "minimize all windows", but since the introduction of Xfce 4.14, there is now a keyboard shortcut for that: "Super+D" (Super is the "Windows" key on most keyboards). "Super+L" locks the screen.

The Thunar file manager is the heart of Xfce and is integrated with the Ristretto image viewer, as both

share the same properties dialogue boxes, allowing image Exif metadata to be viewed in either application. Thunar utilizes Catfish for file searches and that works well. This version of Thunar has a new look and also includes changes to its built-in bulk file renamer.

The Xfce panel (task bar) is, by default, found at the top of the screen, but can quickly be unlocked and moved to the bottom or either

side of the screen. Many users may prefer it at the bottom of the screen or on the left side, like the GNOME launcher. When used vertically, it can also be set to display its icons in vertical orientation.

Xubuntu has included LibreOffice since 19.04 or at least most of it. LibreOffice includes Draw, Writer, Calc, Impress and Math, lacking only LibreOffice

Base, the database application. Most people don't use databases, but it can easily be installed from the repositories, if desired.

The default text editor in Xubuntu is Mousepad, which features ten choices for syntax highlighting color schemes, including some dark themes, making writing web pages or coding software much easier. It lacks only spell-checking to be the ideal text editor.

## COLOR SCHEMES AND SETTINGS

This Xubuntu release has newly-designed default wallpaper, featuring a dark indigo night sky background and a constellation theme. If that is not to your liking, then Xubuntu 20.04 LTS comes with 18 alternates, including some nice graphic design work and some great photography too. Of course, you can always use your own wallpaper image.

Once again, the default window scheme is Greybird, which is not my favorite, as the active and inactive windows are far too similar. Dark schemes are all the rage these



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days, and so this release includes a new one, Greybird-dark, with very dark grey window tops and backgrounds. It also has almost no active/inactive window differentiation, and, furthermore, the windows titles are almost unreadable due to being dark grey on dark grey with shadowing. There are four other installed themes, but none are any better. New themes can be found on sites like [xfce-look.org](http://xfce-look.org) and installed, but

that takes some skill on the part of the user.

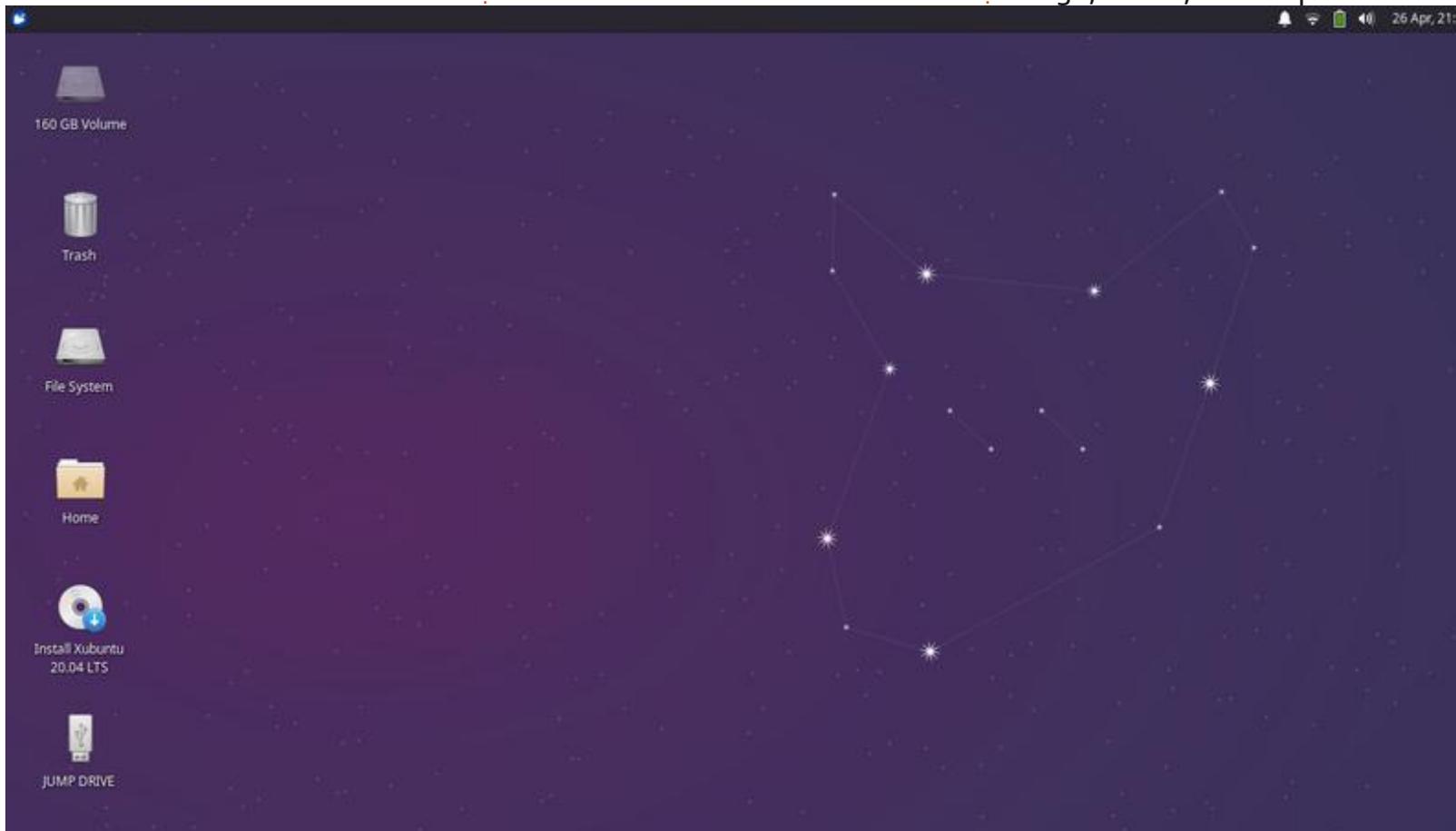
In testing Xubuntu 20.04 LTS, I had issues with my old 2011 model System76 laptop touchpad not working right, dancing the cursor all over the place or freezing. The solution was, once again, to turn off touchpad scrolling altogether and dial down the sensitivity to zero, which made the touchpad usable. This may just be an issue

with my old hardware, so other laptop users may not have this problem. I tested out a regular desktop mouse and that worked fine.

## CONCLUSIONS

Xubuntu 20.04 LTS is the Long Term Support release that Xubuntu fans have been waiting for. This 29th Xubuntu release is graceful in design, stable, and simple to use.

New users will find that it comes with most of the software needed to get straight to productive work. Experienced Xubuntu users will find this LTS release very familiar, just an update without any unwelcome surprises, but with three year's worth of support. If it had some better default window themes it would be just about perfect.



**Adam Hunt** started using Ubuntu in 2007 and has used Ubuntu since 2010. He lives in Ottawa, Ontario, Canada, in a house with no Windows.



# LETTERS

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

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# Q&A

Compiled by EriktheUnready

If you have a Linux question, email it to: [questions@fullcirclemagazine.org](mailto: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. If your question does not appear immediately, it is just because there is such a lot, and I do them 'first-come-first-served'.

Back in the day, computer architecture and topology was very different. One of my WANG clients held on to their equipment well past the 'best before' date. I understood why though, it suited their needs and they paid a lot of money for it. The problem they ran into was that WANG stopped supplying parts and had moved on to bigger and better things (well, WANG filed for bankruptcy too, but that is another story). The issue was boards for those huge bad printers and things like the terminals. With usable parts in our

stores growing less by the week, we had to make a plan. Turned out that those boards were really easy to fix, a capacitor here, a transistor there. Suddenly I had switched from field support engineer to board repair technician. What I knew about board repair was scary! If I could not find the error, I would start replacing parts to see if the outcome changed. Just to be fair, usually it was obvious, popped capacitors or open transistors. Move the clock forward like 20 years and I bought a nifty AMD graphics card. I moved and, somehow in the move, one of those surface mounted resistors came off. I did not know the value and could not repair it. Basically a few months' salary wasted. I am sure I could fix it, if I knew what value it should be, but the circuit diagrams were not available, like with WANG. Hell, we had shelves of manuals, describing every part of the system. I am sure with enough time, I could build one of those. Everyone seems to be on the right-to-repair bandwagon at the moment, and I fully support it. However, manuals to repair your

stuff are not available any more. This is what is attractive to me about open source. I can, at any time, look at the source code for any of my programs. I can even build it myself! This may change over time, so know what you have and try to preserve it, your kids may thank you one day.

**Q** : Hello, I am new to this whole free software thing and I was wondering why I can't copy a command and paste it into the terminal? The instructions clearly state, copy and paste this in your terminal. What am I doing wrong?

**A** : Just a quick note about terminals: they are actually terminal emulators. Some allow reading of the clipboard with ctrl+v and some you need to right-click then paste. If the terminal you are using does not allow what you need, you can use another.

**Q** : I am still on Ubuntu 18.04. My laptop has 4GB of RAM. I am running the latest version of LMMS.

When I load up a song, all my instruments are distorted. I can kinda fix it by dragging my volume slider to 150% then 0% a few times. I just un-installed and re-installed and get the same result - horrible noise.

**A** : I need you to go to settings and find the speaker icon. Change your "audio interface" to another one, try SDL, for instance, save and restart LMMS. This should sort you out.

**Q** : I have an application that runs in chrome. Due to power failures, it needs to continue. However I need an older version of chrome for all our stuff to run properly. I am not worried about security as this is a closed system. How do I install an older version of chrome to work with our app on IIS? The version that ships with Ubuntu is already too new.

**A** : You did not say which flavour you are running, as I did not even know Ubuntu shipped with Chrome? Did you mean Chromium?

## Q&A

Anyway, you can download the older version of Chrome as a .deb-file and install it that way.

**Q** : Hey, I am learning C and I was wondering which version of GCC I should use to follow the tutorials? It says I need a C compiler. I have to choose the right one in Code::Blocks IDE. But I am not sure as to what the right one is?

**A** : Go with what you have. Whatever came with Ubuntu is good enough. Don't get caught up in the wrong details, rather concentrate on the programming part.

**Q** : I am loving workspaces in Ubuntu Budgie. However, I have somehow made more than I can ever use. How can I decrease them? I have checked the settings.

**A** : Right-click inside a workspace representation in your taskbar and remove it.

**Q** : My issue isn't with Ubuntu playing videos in Parole media player, but when I skip ahead or

back, it just closes. Ubuntu is feeling a lot more unstable than Windows used to. What can be wrong?

**A** : Parole is buggy that way. May I suggest you look at another player if you like to skip. It is not Ubuntu's fault.

**Q** : I use my laptop mainly at night. It is a Lenovo G50-80. The brightness setting is unlike other laptops I have used, as under Ubuntu 18.04, the minimum brightness setting is actually OFF. You can set it very low with the mouse, but if you use the buttons, it will go all the way. Now, when the laptop goes to sleep, I can't unlock it as there is no display, if I turn it off. So usually I try blindly. Is there a way to get the brightness up before I type my password. The keys are disabled once the laptop is locked.

**A** : Close the laptop lid and wait for the hard drive light to settle. Now open the laptop and the brightness level should jump to default. Then you should be able to see where you are typing.

**Q** : Here's the deal. I kinda messed up. I was editing my system files, and, after rebooting, I can no longer access my user. I can still access my brother's user. I can su into Dave, but I can't log in graphically. How can I fix my system files?

**A** : Quickest and easiest is to copy the files you messed up from your brother's profile or look for the template in /etc/skel.

**Q** : How can I fix this error in dmesg: [80187.069964] Bluetooth: hci0: unexpected event for opcode 0xfc2f?

**A** : You have not told me what the problem is, if there even is one? Bluetooth may be turned off by a switch, in your BIOS or by software. Should you not have an issue or not use bluetooth, just ignore it.

**Q** : I downloaded and installed Raspbian from my Ubuntu PC. Intel motherboard and Intel CPU. But when I put the Apacer SD card in my Raspberry pi, it doesn't boot. Now when I put it back in my PC, it is just not showing up. I put it in my

Android phone too, but it is just missing.

**A** : Most probably the card died. If it is under warranty, swop it out.

**Q** : I have Thunderbird installed and I have accidentally deleted some important emails. How can I get them back?

**A** : This depends if you are using POP or IMAP. My suggestion is to call up your mail provider and ask them to restore the last 30 days worth of mail. Just in case it was IMAP, and you deleted it off the server.

**Q** : On my laptop, I can look up my external IP in the browser, but my cousin's machine does not have a desktop or browser. How can I see his public IP from a screen session? He has BASH.

**A** : The easiest way I can think of, is: curl ifconfig.me

**Q** : I have updated Veracrypt on several occasions now, I started on 1.16. Is my data still safe or do I

need to re-encrypt my drives?

**A**: You are updating the APPLICATION, not the encrypted volume. The algorithm stays the same, but any flaws in the application that can say, leak your password, are fixed. You do not have to worry about your encrypted containers.

**Q**: Whenever I try to install a DEB file, I get "a newer version is available in the software channel". But I don't want the newer version. Can you help me?

**A**: If you need the previous version, by all means, shoulder past the warning. It is just that, a warning; it does not prevent you from installing the version that you need.

**Q**: I have installed Voyager based on Ubuntu. When I click the Voyager button on the right, I get a different Firefox that I have installed? How do I fix this?

**A**: HAH! You had me clicking on mine as I also use Voyager and never used that button. You are not getting another version of

Firefox, rather a customised home page. Nothing to be concerned about. If in doubt, peruse the index file.

**Q**: I Installed Ubuntu on my PC last night, but I was tired and I had some wine. Now I can't remember what password I used. Can I find out what password I used?

**A**: Short answer is you cannot. If you are a noob, I suggest that you just reinstall it as the quickest fix.

**Q**: I am seriously stuck trying to access my Ubuntu PC from my Windows laptop. I am truly stumped. I followed so many tutorials from google, but I just can't get it to work.

**A**: Yes, a pet hate of mine too, if you need the desktop interface. May I rather suggest installing Anydesk and using that. It gives the least amount of grey hairs.

**Q**: My memory is being eaten up inside Firefox. I suspect that it

is a script on <https://music.163.com> that is doing it, but how can I be sure. I have like a different window open for each artist, so I need to close them all and look for them all again, which is a pain.

**A**: I am not sure what you mean 'inside Firefox' (probably a Google translate glitch), but you can see each tab's memory usage by typing: "about:performance" in a new tab.

**Q**: How can I record a webinar? I am home with the kids and they demand a lot of attention. I need to be able to go over the content again if interrupted. Thanks. I am using Ubuntu Mate 18.

**A**: Use a screen recorder like OBS studio.

**Q**: I went to our library with my own Ubuntu laptop. They added a proxy for me to use the network. I forgot to ask them to remove it before I left. Now I can't use my laptop on my home network. Where can I remove it please?

**A**: Go to Network settings > Edit connections, find your WiFi, and double-click it. You will now be presented with a window with a proxy tab. Just remove it from there.

**Q**: Sometimes when I unzip a downloaded file, I get a hidden file \_MACOSX\_ created even though I have a Toshiba laptop with Ubuntu 16.04. I have tried Engrampa, File roller, etc. I keep getting this file that has the same folders inside. What settings do I need to change?

**A**: Nothing, those hidden files are on the Apple MAC of the person Zipping the file and just gets unpacked on your side. Simply delete those folders, you do not need them.



**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.



Website: [https://www.gog.com/game/into\\_the\\_breach](https://www.gog.com/game/into_the_breach)

Price: \$14.99 GOG (April 2020)

Blurb: "Control powerful mechs from the future to defeat an alien threat. Each attempt to save the world presents a new randomly-generated challenge in this turn-based strategy game from the makers of FTL."

Into the Breach is a 2.5D turn-based tactics game in which your squad of three mechs is pitted against a swarm of underground-breeding bugs, the Vek. Each level is played in a limited number of turns on a chess board, sorry, 8x8 grid. Your goal is the eradication of the infestation, but mostly to survive. Are you ready to be overrun?

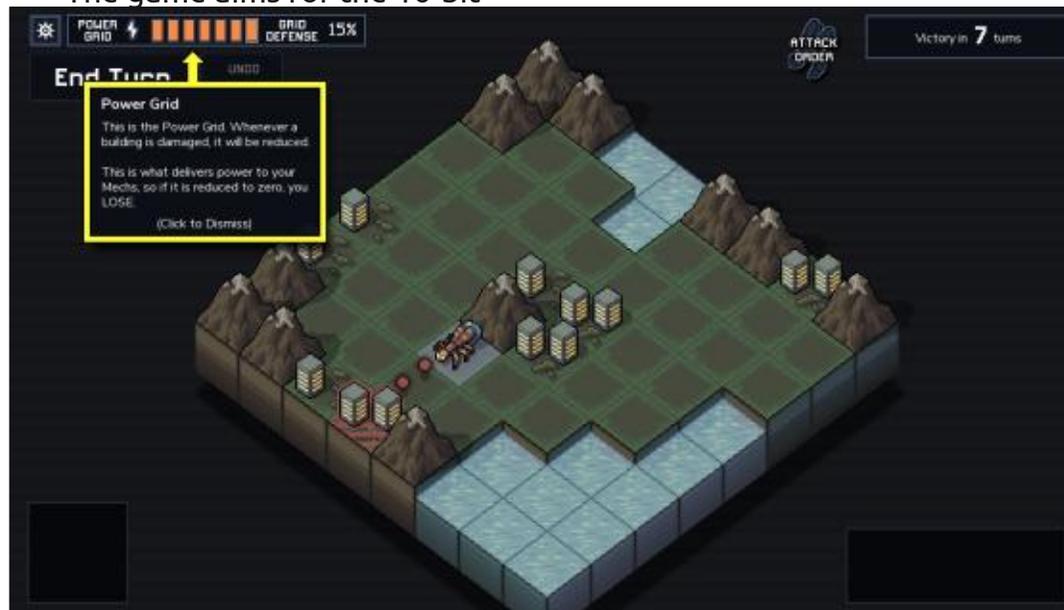
This is a game from the same developers as FTL (Subset Games). So be ready to fly by the seat of your pants! To be honest and upfront, I was expecting Starship troopers / Macross, but even with my slight disappointment (not at

the game, but my own expectations), this is a winner. I am playing Mechwarrior and Battletech at the moment, and this completes the holy trinity.

Into the Breach has its own take on the familiar concept of tactical turn-based strategy, and mixes it up with a bit of anime, where building-sized monsters and robots deck it out. I hope these give you an idea of what you will get.

## GRAPHICS:

The game aims for the 16-bit



era aesthetic and manages it pretty well. The "filler" pixel art is great. I say filler as these "cut-scenes" advance the story. Looking at the screen-shots do not do it justice, rather, once understanding dawns on you, the graphics are almost second-class citizens as the game play draws you in. That said, they are gorgeously well made, and you can see that a lot of effort was put into the game. The sprites of the war machines and the buildings and terrain somehow remind me of "Advance Wars" on the Gameboy Advance. There are no overly bright red, green and blues though,

like that game, rather the colors are a bit muted and easy on the eyes if you plan on playing for a while.

## GAMEPLAY:

Remember when I pseudo slip-of-the-tongue mentioned a chess board? Well, the game feels like grand chess, only with more explosions. Some of the tiles are impassible, some contain your power buildings, which you can also damage. This already should have you pondering every possible move. On top of this, you are always outnumbered, and, like the series "Under the mountain" (1980s), your enemy will emerge from below when you least expect it. (This is not a 'tanks of freedom' clone!). You will have to be cunning and ruthless to make it at this game. Keep your eyes peeled for battlefield drops as these can help you turn the tide of battle. You will always find novel ways of doing things, for instance, when the pavement cracks and a monster is about to emerge, you can push another of his behemoth

brethren on top of the cracked pavement, preventing him from emerging. It is in this “thinking-outside-the-box” maneuvers that a lot of the fun lies. There are also badges to earn for these types of maneuvers. The mechanics are kept simple, there is only move and damage. No to-hit chance or other factors you will find in strategy or war games, but you will need to strategise like a fox. Since you are going back in time to undo what has been done, time is on your side, and you can also redo your actions. Don't be fooled into thinking you have unlimited do-overs though. There are optimised outcomes and figuring it out is part of the fun, even though, at first, it may seem hopeless. Other than unlocking badges, you can also unlock units / squads when you are into the game.

There are four islands, each with its own unique challenges, and, of course, a boss to fight. You need to keep your eye on your orange power bar at all times, as island-to-island power is not great, should you need it. Just be prepared to fail, and, if you don't, you are a better strategist than me. Failure is how you learn, so do not take it the wrong way; embrace, adapt and

overcome. (Now where have I heard that before?). You will learn a lot about yourself, as you have nobody but yourself to blame in this game.

## SOUND AND MUSIC:

Remember I said the game feels like anime with giant robots and insects; well, the music sounds like it would be right at home in an anime movie. It is tense, yet it does not grind your ears; it just adds to the atmosphere. There is no relenting in the feeling the music confers upon you. Kudos to Ben Prunty. <https://benprunty.bandcamp.com/album/into-the-breach-soundtrack> (the same composer as with their

previous game, FTL). For those of you who do not have the game, please go listen here: <https://www.youtube.com/watch?v=AVaSEEdfmRI>, and witness the taut tunes that are about to abuse your brain. The soundtrack is cheaper on steam than it is on bandcamp, and I would recommend getting it, either way. “The blast garden” is my current favourite, but there are so many top notch tracks here and not one doozie, unlike other music albums you may buy. The sounds could have been a bit more interesting, but since they happen all the time, I could also see that sharp sounds could get irritating very quickly. I suppose I would have just liked more variety?

## OVERALL:

You may ask, why are you reviewing only a game from 2018 now? Well, it came to Windows in 2018, then to the Apple Mac, then to the Nintendo switch, and only now, in 2020, to Linux. There is so much more to this game than I have told you or you could glean from the screenshots. This game is so balanced, it could do ballet on the edge of a knife. I would definitely recommend that you go and get it now, while it is hot. (That said, this review may not be published for a few months, and I would bet that if you read this later, it would still be hot!).



**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.



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

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

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

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



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