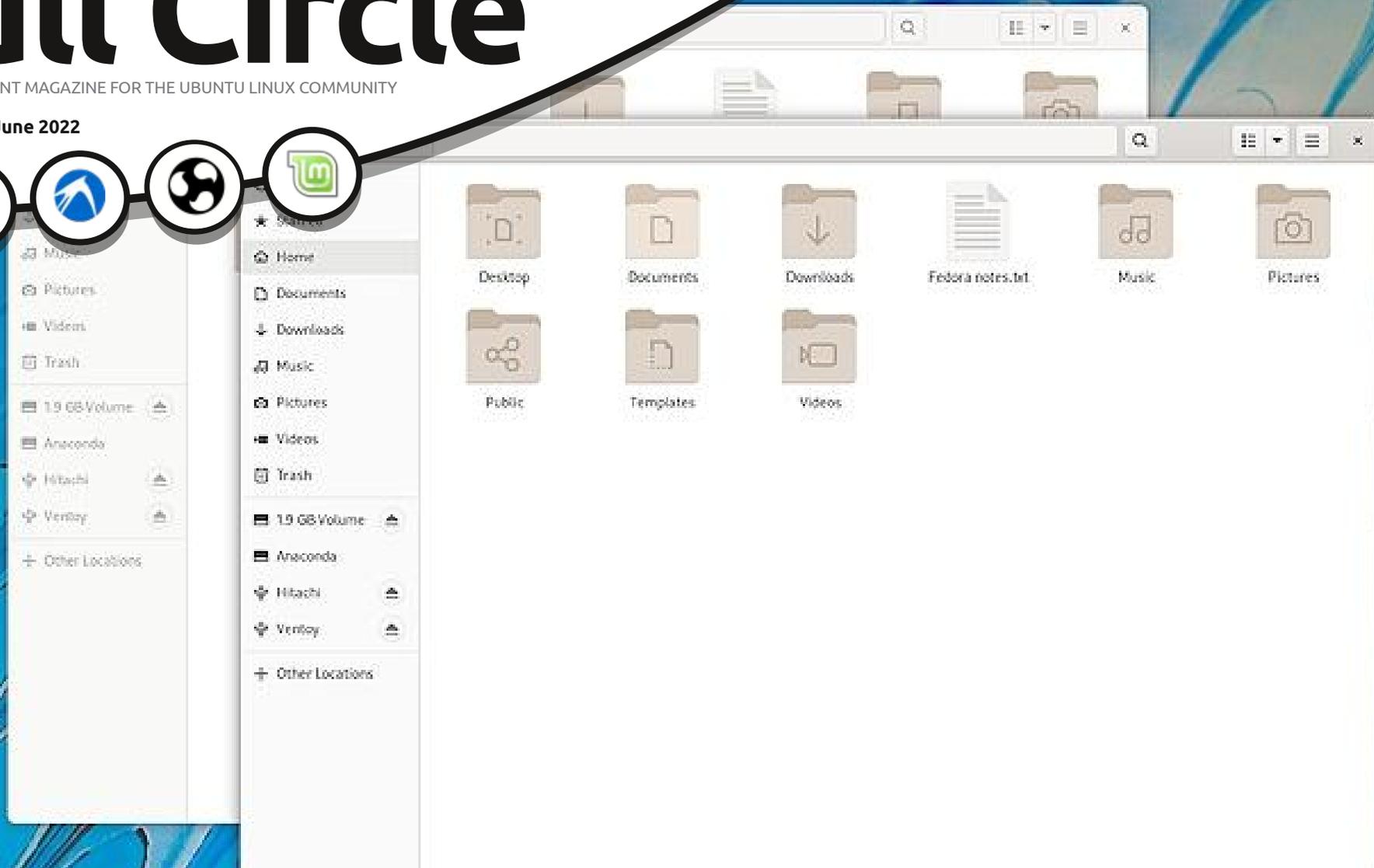




# Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #182 - June 2022

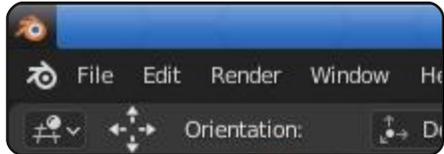


## FEDORA 35 ANOTHER DISTRO THAT'S NOT DEBIAN

# HowTo



Python p.23



Blender p.28

Municipality	Average Temperatures in Four B...			
	January		April	
	Max	Min	Max	Min
Prince Rupert	5.6 °C	-0.8 °C	10.2 °C	2.5 °C
Tofino	8.3 °C	2.3 °C	11.9 °C	4.0 °C
Nanaimo	6.9 °C	0.1 °C	14.1 °C	3.9 °C

Latex p.31



p.XX



Inkscape p.33

# Graphics



# Full Circle

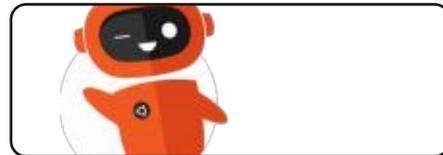
THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

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

Command & Conquer p.21



... p.XX



Ubuntu Devices p.XX



The Daily Waddle p.37



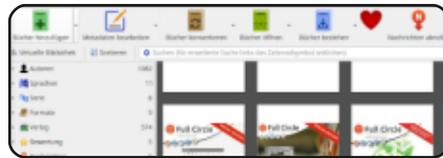
Linux News p.04



Everyday Ubuntu p.38



Micro This Micro That p.41



My Story p.46



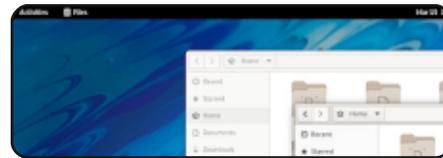
Letters p.XX



Review p.48



Q&A p.62



Review p.52



Ubuntu Games p.65



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## WELCOME TO THE LATEST ISSUE OF FULL CIRCLE

Another full quota of goodness for you this month with: Python, Micro, Latex, Inkscape, Blender, and lots of other goodness.

Within this month's Inkscape article is a quick note from Mark about a particularly nasty bug that was in a recent release. Be sure to check your version and upgrade if need be.

For our reviews this month we have Kubuntu and Fedora. Fedora is, of course, the non-Debian distro of the month. We also have a bit of an ebook theme this month with a quick look at various ebook software (eg: Calibre) and a My Story looking at Calibre. In case you don't know it: Calibre is a great piece of software for converting ebook formats, viewing ebooks, keeping a tab on your collection, and so much more.

Last, but not least, if you'd like to read a game review for a game that almost caused Erik to have a nervous break down... this is your chance.

Don't forget: if you're looking for some help, advice, or just a chit chat: remember, we have a **Telegram** group: <https://t.me/joinchat/24ec1oMFO1ZjZDc0>. I hope to see you there. Come and say hello.

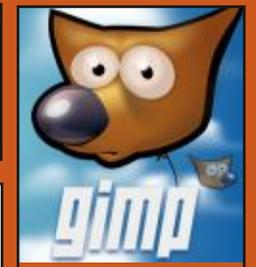
**Anyway, all the best, and stay safe!**

*Ronnie*

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## SIMH SIMULATOR LICENSE

### DISPUTE:

05/21/2022

Mark Pizzolato, principal developer of the retrocomputer simulator SIMH, added a restriction to the license text regarding the ability to use future changes made to the sim\_disk.c and scp.c files. The rest of the project files, as before, are distributed under the MIT license.

The license change was a response to criticism of the AUTOSIZE feature added last year, which resulted in metadata being added to disk images of systems running in the emulator, which increased the image size by 512 bytes. Some users expressed dissatisfaction with this behavior and recommended saving metadata not in the image itself, which reflects the contents of the disk, but in a separate file. Since it was not possible to convince the author to change the default behavior, some derivative projects began to change the specified functionality

through the application of additional patches.

Mark Pizzolato solved the issue radically by adding a clause to the project license that prohibits the use of all new code that he will add to the sim\_disk.c and scp.c files after changing the license text, in case of changing the behavior or default values related to the AUTOSIZE functionality. The sim\_disk.c and scp.c code added before the license change is still available under the MIT license as before.

This action was criticized by other project participants, as the change was made without taking into account the opinions of other developers and now SIMH as a whole can be perceived as a non-free project, which will interfere with its promotion and integration with other projects. Mark Pizzolato pointed out that the changes to the license only apply to the sim\_disk.c and scp.c files developed by him personally. For those who are not happy with adding data to the image when it boots, he

recommended mounting disk images in read-only mode or turning off the AUTOSIZE feature by adding the "SET NOAUTOSIZE" parameter to the ~/simh.ini configuration file.

[https://groups.io/g/simh/topic/new\\_license/91108560](https://groups.io/g/simh/topic/new_license/91108560)

## VULNERABILITY IN THE LINUX PERF KERNEL

### SUBSYSTEM:

21.05.2022

A vulnerability (CVE-2022-1729) has been identified in the Linux kernel that could allow a local user to gain root access to the system. The vulnerability is caused by a race condition in the perf subsystem, which can be used to initiate access to an already freed area of the kernel memory (use-after-free). The problem has been manifesting since the release of the 4.0-rc1 kernel. Exploitability has been confirmed for releases 5.4.193+.

The fix is only available in the

form of a patch so far. The danger of the vulnerability is mitigated by the fact that most distributions restrict access to perf to unprivileged users by default. As a security workaround, you can set the kernel.perf\_event\_paranoid sysctl parameter to 3.

<https://www.openwall.com/lists/oss-security/2022/05/20/2>

## HP HAS ANNOUNCED A LAPTOP THAT COMES WITH Pop!\_OS:

21.05.2022

HP has announced the HP Dev One laptop, designed for application developers and shipped with the Linux distribution Pop!\_OS. The laptop is based on an 8-core AMD Ryzen 7 PRO processor, equipped with a 14-inch (FHD) anti-glare screen, 16 GB of RAM and 1TB NVMe. The RRP is 1099 US dollars.

The COSMIC desktop supplied in the Pop!\_OS distribution is based on a modified GNOME Shell and



includes a set of original add-ons for GNOME Shell, its own theme, its own set of icons, other fonts (Fira and Roboto Slab) and changed settings. Unlike GNOME, COSMIC continues to use a split view for navigating open windows and installed applications. For window manipulation, both the traditional mouse control mode, familiar to beginners, and the tiled window layout mode, which allows you to control the work using only the keyboard, are provided.

<https://hpdevone.com/>

## UBUNTU 22.10 WILL MOVE TO AUDIO PROCESSING WITH PIPEWIRE INSTEAD OF PULSEAUDIO:

21.05.2022

The Ubuntu 22.10 release development repository has moved to use the default PipeWire media server for audio processing. PulseAudio-related packages have been removed from the desktop and desktop-minimal packages, and for compatibility, instead of libraries for interacting with PulseAudio, a pipewire-pulse layer

that runs on top of PipeWire has been added, which allows you to keep all existing PulseAudio clients working.

Heather Ellsworth of Canonical has confirmed the decision to fully migrate to PipeWire in Ubuntu 22.10. In Ubuntu 22.04 both servers were used in the distribution - PipeWire was used to process video when recording screencasts and providing access to the screen, but the audio continued to be processed using PulseAudio. In Ubuntu 22.10, only PipeWire will remain. Two years ago, a similar change was already implemented in the Fedora 34 distribution, which made it possible to provide professional audio processing capabilities, get rid of fragmentation, and unify the audio infrastructure for different applications.

PipeWire offers an advanced security model that allows you to manage access on a, per-device and per-stream basis, making it easy to stream audio and video from and to isolated containers. PipeWire can process any media streams and is able to mix and redirect not only audio streams, but also video streams, as well as manage video

sources (video capture devices, web cameras, or screen content displayed by applications). PipeWire can also act as a low-latency audio server and provide functionality that combines the capabilities of PulseAudio and JACK, including the needs of professional audio processing systems that PulseAudio could not claim.

<https://discourse.ubuntu.com/t/pipewire-as-a-replacement-for-pulseaudio/28489/3>

## LOTUS 1-2-3 PORTED TO LINUX:

22.05.2022

Tavis Ormandy, a security researcher at Google, ported a Lotus 1-2-3 spreadsheet, released in 1988, three years before Linux itself, to run on Linux. The port is based on the processing of executable files for UNIX, found in the archive with warez on one of the BBS. The work is interesting in that porting is done at the level of machine codes and dynamic linking without the use of emulators or virtual machines. The result is an executable file that can run on Linux without any extra layers. A

toolkit for adapting publicly available Lotus 1-2-3 binaries to run on Linux is available on GitHub.

During porting, adaptation to the Linux system call interface was made, calls were redirected to glibc, incompatible functions were replaced, and an alternative driver for output to the terminal was integrated. The license check bypass has also been added to his copy, but Tavis owns a boxed copy of Lotus 1-2-3 for MS-DOS and is legally entitled to use the product. The port is not Tavis' first attempt at running Lotus 1-2-3 on Linux, having previously provided a dedicated driver for DOSEMU to run a DOS version of Lotus 1-2-3 on modern terminals. The main question is why? XD

<https://lock.cmpxchg8b.com/linux123.html>

## KDE PLASMA 5.25

### DESKTOP TESTING:

22.05.2022

The beta version of the Plasma 5.25 custom shell is available for testing. You can test the new release through a live build from

the openSUSE project and a build from the KDE Neon Testing edition project . Packages for various distributions can be found on the link below. The release is expected on June 14th.

<https://kde.org/announcements/plasma/5/5.24.90/>

## DEEPMIND OPENS CODE FOR MUJOCo PHYSICS SIMULATOR:

23.05.2022

DeepMind has opened the source code for the MuJoCo (Multi-Joint dynamics with Contact) engine for simulating physical processes and switched the project to an open development model, which implies the possibility of participation in the development of

community representatives. The project is seen as a platform for research and collaboration on new technologies related to the simulation of robots and complex mechanisms. The code is published under the Apache 2.0 license. Only Linux, Windows and macOS platforms are supported.

MuJoCo is a library that implements an engine for simulating physical processes and modeling articulated structures interacting with the environment, which can be used in the development of robots, biomechanical devices and artificial intelligence systems, as well as in the creation of graphics, animation and computer games. The engine is written in C, does not use dynamic memory allocation, and is optimized for maximum performance.

MuJoCo allows you to manipulate objects at a low level, while providing high precision and extensive modeling capabilities. Models are defined using the MJCF scene description language, which is based on XML and compiled using a special optimizing compiler. In addition to MJCF, the engine supports loading files in the universal URDF format (Unified Robot Description Format). MuJoCo also provides a GUI for interactive 3D visualization of the simulation process and rendering of the results using OpenGL.

<https://www.deepmind.com/blog/open-sourcing-mujoco>

## ALPINE LINUX 3.16:

24.05.2022

The release of Alpine Linux 3.16 is available, a minimalistic distribution built on the Musl system library and the BusyBox utility set. The distribution is distinguished by increased security requirements and is built with SSP (Stack Smashing Protection) protection. OpenRC is used as the initialization system, and its own apk package manager is used for package management. Alpine is used to build official Docker container images. Bootable iso images (x86\_64, x86, armhf, aarch64, armv7, ppc64le, s390x) are prepared in five versions: standard (155 MB), unpatched kernel (168 MB), advanced (750 MB) and for virtual machines (49 MB).

<https://alpinelinux.org/posts/Alpine-3.16.0-released.html>

## NGINX 1.22.0 RELEASED:

24.05.2022

After 13 months of development, a new stable branch of the high-performance HTTP server and multi-protocol



# DistroWatch.com

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

proxy server nginx 1.22.0 was released, which incorporates the changes accumulated in the 1.21.x main branch. In the future, all changes in the 1.22 stable branch will be related to the elimination of serious bugs and vulnerabilities. The main branch of nginx 1.23 will soon be created, where the development of new features will continue. For ordinary users who do not have the task of ensuring compatibility with third-party modules, it is recommended they use the main branch, where the commercial Nginx Plus product are made every three months.

According to Netcraft's April report, nginx is used on 20.08% of all active sites (20.15% a year ago, 19.56% two years ago), which corresponds to the second place in popularity in this category (Apache's share corresponds to 22.58% (25.38% a year ago), Cloudflare - 10.42% (8.51%), Google - 8.89% (10.09%) At the same time, when considering all sites, nginx retains its leadership and occupies 31.13% of the market (35.34% a year ago, 36.91% two years ago), while the share of Apache corresponds to 23.08% (25.98%), OpenResty (a platform based on nginx and LuaJIT) - 8.01%

(6.55%), Cloudflare - 5.49%, Microsoft IIS - 4% (5.96%).

<http://nginx.org/#2022-05-24>

## CLONEZILLA LIVE 3.0.0

**RELEASED:**

24.05.2022

The new release of Clonezilla Live 3.0.0 is out, designed for fast disk cloning (only used blocks are copied). The tasks performed by the distribution are similar to the proprietary Norton Ghost product. The distribution iso image size is 356 MB (i686, amd64).

The distribution is based on Debian GNU/Linux and uses the code of projects such as DRBL, Partition Image, ntfscclone, partclone, udpcast. Boot from CD/DVD, USB Flash and network (PXE) is possible. LVM2 and FS ext2, ext3, ext4, reiserfs, reiser4, xfs, jfs, btrfs, f2fs, nilfs2, FAT12, FAT16, FAT32, NTFS, HFS+, UFS, minix, VMFS3 and VMFS5 (VMWare ESX) are supported. There is a mode for mass cloning over the network, including with the transmission of traffic in multicast mode, which allows you to simultaneously clone

the source disk to a large number of client machines. It is possible both to clone from one disk to another, and to create backup copies by saving a disk image to a file. Cloning at the level of entire disks or individual partitions is also possible.

<https://sourceforge.net/p/clonezilla/news/2022/05/stable-clonezilla-live-300-26-released/>

## MIR 2.8 DISPLAY SERVER

**RELEASED:**

24.05.2022

The Mir 2.8 display server is out, the development continued by Canonical, despite the refusal to develop the Unity shell and the Ubuntu edition for smartphones. Mir remains in demand in Canonical projects and is now positioned as a solution for embedded devices and the Internet of Things (IoT). Mir can be used as a composite server for Wayland, which allows you to run any applications using Wayland (for example, built with GTK3/4, Qt5/6 or SDL2) in Mir-based environments. Installation packages are prepared for Ubuntu 20.04, 21.10 and 22.04 (PPA) and Fedora

33, 34, 35 and 36. The project code is distributed under the GPLv2 license.

<https://discourse.ubuntu.com/t/mir-release-2-8-0/28581>

## ROADMAP FOR BUDGIE'S USER ENVIRONMENT:

05/26/2022

Joshua Strobl, who recently retired from the Solus distribution and founded the independent organization Buddies Of Budgie, has released plans for further development of the Budgie desktop environment. The Budgie 10.x branch will continue to evolve towards providing generic, distro-independent components. Packages with Budgie Desktop, Budgie Control Center, Budgie Desktop View and Budgie Screensaver are offered for inclusion in the Fedora Linux repositories. In the future, they plan to prepare a separate edition (spin) of Fedora with a Budgie desktop, similar to the Ubuntu Budgie edition. The Budgie 11 branch will evolve towards separating the layer with the implementation of the main

functionality of the desktop and the layer that provides visualization and information output. Such a separation will allow abstracting the code from specific graphical toolkits and libraries, as well as starting to experiment with other models for presenting information and connecting other output systems. As an example, it will be possible to start experimenting with the previously planned transition to the set of EFL (Enlightenment Foundation Library) libraries developed by the Enlightenment project.

<https://blog.buddiesofbudgie.org/state-of-the-budgie-may-2022/>

## RELEASE OF THE ANONYMOUS NETWORK I2P 1.8.0 AND THE C++ CLIENT I2PD 2.42:

26.05.2022

**A**nonymous network I2P 1.8.0 and C++ client i2pd 2.42.0 have been released. I2P is a multi-layer anonymous distributed network operating on top of the regular Internet, actively using end-to-end encryption to guarantee anonymity

and isolation. The network is built in P2P mode and is created thanks to the resources (bandwidth) provided by network users, which makes it possible to do without the use of centrally controlled servers (communications within the network are based on the use of encrypted one-way tunnels between the participant and peers). The new version of I2P offers an initial implementation of the "SSU2" UDP transport, which significantly improves performance and security. The introduction of SSU2 will completely update the cryptographic stack, get rid of the very slow ElGamal algorithm (ECIES-X25519-AEAD-Ratchet will be used for end-to-end encryption instead of ElGamal/AES+SessionTag), reduce overhead compared to SSU and improve the performance of mobile devices

<https://github.com/PurpleI2P/i2pd/releases/tag/2.42.0>

## ALMALINUX 9.0 DISTRIBUTION AVAILABLE: 05/26/2022

**T**he AlmaLinux 9.0 distribution has been released, synchronized

with the Red Hat Enterprise Linux 9 distribution and containing all the changes proposed to this branch. The AlmaLinux project became the first public distribution based on RHEL, releasing stable builds based on RHEL 9. Installation images are prepared for the x86\_64, ARM64, ppc64le and s390x architectures in the form of boot (800 MB), minimum (1.5 GB) and full image (8 GB). Live builds with GNOME, KDE and Xfce will be created later, as well as images for Raspberry Pi boards, containers and cloud platforms.

The distribution is fully binary compatible with Red Hat Enterprise Linux and can be used as a replacement for RHEL 9 and CentOS 9 Stream. Changes come down to rebranding, removal of RHEL-specific packages such as redhat-\*, insights-client and subscription-manager-migration\*.

<https://almalinux.org/blog/almalinux-9-now-available/>

## UBUNTU DEVELOPERS BEGIN TO SOLVE PROBLEMS WITH THE SLOW FIREFOX SNAP:

27.05.2022

**C**anonical has begun addressing performance issues with the Firefox snap package that was offered by default in Ubuntu 22.04 instead of the regular deb package. The main user dissatisfaction is due to the very slow launch of Firefox. For example, on a Dell XPS 13 laptop, the first launch of Firefox after installation takes 7.6 seconds, on a Thinkpad X240 laptop it takes 15 seconds, and on a Raspberry Pi 400 board it takes 38 seconds and on my potato laptop it takes over a minute. Restarts are completed in 0.86, 1.39 and 8.11 seconds, respectively.

<https://ubuntu.com/blog/how-are-we-improving-firefox-snap-performance-part-1>

## A HARDWIRED PASSWORD REVEALED IN LINUXFX:

27.05.2022

Members of the Kernel community have identified an unusually nonchalant attitude towards security in the Linuxfx distribution, which offers a build of Ubuntu with a Windows 11-styled KDE user environment. According to the project's website, the distribution has more than a million users and about 15,000 downloads this week. The distribution offers activation of additional paid features, which is done through the introduction of a license key in a special graphical application.

A study of the license activation application (/usr/bin/windowsfx-register) showed that it includes a hardwired login and password for accessing an external MySQL DBMS, to which data about a new user is added. The detected credentials allow you to get full access to the database, including the "machines" table, which reflects information about all installations of the distribution, including user IP addresses.

<https://kernal.eu/posts/linuxfx/>

## RELEASE OF LXLE FOCAL: 05/28/2022

After more than two years since the last update, LXLE Focal is back on the menu, developed for use on legacy systems. The LXLE distribution builds on the legacy of Ubuntu MinimalCD and attempts to provide a lightweight solution that combines support for legacy hardware with a modern user environment. The need to create a separate branch, was due to the desire to include additional drivers for older systems and the processing of the user environment. The size of the bootable image is 1.8 GB.

The composition of the new release is synchronized with Ubuntu 20.04.4 LTS branch (Ubuntu 18.04 was previously used). Default apps replaced: Arista replaced with HandBrake, Pinta with GIMP, Pluma with Mousepad, Seamonkey with LibreWolf, Abiword/Gnumeric with LibreOffice, Mirage with Viewnior, Linphone/Pidgin with uTox. Includes: App Grid Install Center, Blanket Sound Synthesizer, Bluetooth Configurator, Claws Mail

Email Client, Liferea RSS Reader, GAdmin-Rsync Backup Utility, GAdmin-Samba File Sharing Setup, Osmo Scheduler, Interface for TLP GUI power optimization. To compress information in the swap partition, Zswap is used instead of Zram. They also added an interface for customizing pop-up notifications.

<https://lxle.net/articles/?post=lxle-focal-released>

## OPENMANDRIVA ROCK N ROLL: 05/30/2022

A separate alternative build of the OpenMandriva distribution, supplied with the LXQt desktop environment, has begun (in the main build, KDE is offered by default). Two options are offered for download: Rock based on the stable release of OpenMandriva Lx 4.3 (1.6 GB, x86\_64) and Rolling (1.7 GB, x86\_64) based on an experimental continuously updated repository with fresh versions of programs used in the preparation of the next release.

OpenMandriva uses its own

build infrastructure, supplying the RPMv4 package manager and DNF package management tools (originally using RPMv5 and urpmi), building packages and the Linux kernel using the Clang compiler, using the Calamares installer, and using the PipeWire media server. The LXQt (Qt Lightweight Desktop Environment) environment is positioned as a lightweight, modular, fast and convenient continuation of the development of the Razor-qt and LXDE desktops, incorporating the best features of both shells. The LXQt interface continues to follow the classic desktop organization with a modern look and feel that enhances the user experience.

<https://forum.openmandriva.org/t/new-lxqt-isos-for-rock-rolling/4476>

## POWERDNS RECURSOR 4.7.0 CACHING DNS SERVER RELEASED: 05/30/2022

A release of the PowerDNS Recursor 4.7 caching DNS server is available, which is responsible for recursive name resolution. PowerDNS Recursor is

built on the same codebase as PowerDNS Authoritative Server , but PowerDNS recursive and authoritative DNS servers are developed through different development cycles and released as separate products. The project code is distributed under the GPLv2 license.

The server provides tools for remote statistics collection, supports instant restart, has a built-in engine for connecting handlers in the Lua language, fully supports DNSSEC, DNS64, RPZ (Response Policy Zones), allows you to connect blacklists. It is possible to write the resolving results as BIND zone files. To ensure high performance, modern connection multiplexing mechanisms in FreeBSD, Linux and Solaris (kqueue, epoll, /dev/poll) are used, as well as a high-performance DNS packet parser capable of processing tens of thousands of parallel requests.

<https://blog.powerdns.com/2022/05/30/powerdns-recursive-4-7-0-released/>

## RELEASE OF THE NIXOS 22.05 DISTRIBUTION USING THE NIX PACKAGE MANAGER: 05/31/2022

NixOS 22.05 is out, based on the Nix package manager and providing a number of proprietary developments that simplify system configuration and maintenance. For example, in NixOS, all system configuration occurs through a single system configuration file (configuration.nix), it provides the ability to quickly roll back the system to the previous version of the configuration, there is support for switching between different system states, installation of individual packages by individual users is supported, it is possible to use several versions at the same time one program, reproducible builds are provided. Full install image size with KDE 1.7 GB, GNOME - 2.2 GB, reduced console version - 820 MB.

<https://nixos.org/blog/announcements.html#22.05>

## UBUNTU 22.10 WILL REPLACE GEDIT WITH THE NEW GNOME TEXT EDITOR: 05/31/2022

The Ubuntu 22.10 development repository has changed the default text editor. Instead of GEdit, users are offered a new text editor " GNOME Text Editor ", implemented using GTK 4 and the libadwaita library, which offers ready-made widgets and objects for building applications that comply with the new GNOME HIG (Human Interface Guidelines) and are capable of adaptively adapting to screens of any size. The previously offered GEdit editor will remain available for installation from the universe repository (a package in flatpak format can also be used).

GNOME Text Editor is similar in functionality and interface to GEdit, the new editor also offers a set of basic text file editing features, syntax highlighting, a document mini-map, and a tabbed interface. Of the features, support for a dark theme and the ability to automatically save changes to protect against loss of work as a result of a crash stand out. In Ubuntu 22.04, the new editor can

be tested by installing the gnome-text-editor package.

The reason for the transition is: stricter compliance with GNOME style guidelines, transition to the new GNOME technology stack (GTK4 and libadwaita), full support for the dark theme, integration into the main composition of many popular features implemented in GEdit in the form of plugins (new editor does not support plugins).

<https://discourse.ubuntu.com/t/proposal-gnome-text-editor-as-default-text-editor/28286/2>

## NVIDIA PROPRIETARY DRIVER RELEASE 515.48.07: 05/31/2022

NVIDIA has released a new branch of proprietary NVIDIA driver 515.48.07. The driver is available for Linux (ARM64, x86\_64), FreeBSD (x86\_64) and Solaris (x86\_64).

The 515.48.07 release was the first stable release since NVIDIA's disclosure of kernel-level components. The source code for the nvidia.ko, nvidia-drm.ko (Direct

Rendering Manager), nvidia-modeset.ko and nvidia-uvm.ko (Unified Video Memory) kernel modules from NVIDIA 515.48.07, as well as the common components used in them, not tied to the operating system, published on GitHub. Firmware and user-space libraries such as the CUDA, OpenGL, and Vulkan stacks remain proprietary.

<https://forums.developer.nvidia.com/t/linux-solaris-and-freebsd-driver-515-48-07-production-branch-release/216112>

## FTABLES PACKET FILTER

### 1.0.3 RELEASED:\

06/01/2022

The nftables 1.0.3 packet filter, unifying packet filtering interfaces for IPv4, IPv6, ARP and network bridges (aimed at replacing iptables, ip6table, arptables and ebtables) is available for download. Changes required for the nftables 1.0.3 release to work are included in the Linux 5.18 kernel.

The nftables package includes

packet filter components that run in user space, while the kernel level is provided by the nf\_tables subsystem, which has been part of the Linux kernel since release 3.13. At the kernel level, only a generic protocol-independent interface is provided that provides basic functions for extracting data from packets, performing operations on data, and controlling flow.

The filtering rules themselves and protocol-specific handlers are compiled into user-space bytecode, after which this bytecode is loaded into the kernel using the Netlink interface and executed in the kernel in a special virtual machine resembling BPF (Berkeley Packet Filters). This approach makes it possible to significantly reduce the size of the filtering code running at the kernel level and move all the functions of parsing the rules and the logic of working with protocols into user space.

<https://www.mail-archive.com/netfilter-announce@lists.netfilter.org/msg00242.html>

## RELEASE OF I2P 1.8.0 AND THE C++ CLIENT I2PD 2.42:

26.05.2022

Anonymous network I2P 1.8.0 and C++ client i2pd 2.42.0 have been released. I2P is a multi-layer anonymous distributed network operating on top of the regular Internet, actively using end-to-end encryption to guarantee anonymity and isolation. The network is built in P2P mode and is formed thanks to the resources (bandwidth) provided by network users, which makes it possible to do without the use of centrally controlled servers (communications within the network are based on the use of encrypted one-way tunnels between the participant and peers).

On the I2P network, you can anonymously create websites and blogs, send instant messages and e-mail, exchange files, and organize P2P networks. To build and use anonymous networks for client-server (websites, chats) and P2P (file exchange, cryptocurrencies) applications, I2P clients are used. The basic I2P client is written in Java and can run on a wide range of platforms such as Windows, Linux, macOS, Solaris, etc. I2pd is an

independent C++ implementation of the I2P client and is distributed under a modified BSD license.

<https://github.com/PurpleI2P/i2pd/releases/tag/2.42.0>

## PERL 7 WILL SMOOTHLY CONTINUE THE DEVELOPMENT OF PERL 5 WITHOUT BREAKING BACKWARDS COMPATIBILITY:

26.05.2022

The Perl Project Governing Body summarized the plans for the future development of the Perl 5 branch and the creation of the Perl 7 branch. During the discussions, the Governing Council agreed that it is unacceptable to break compatibility with code already written for Perl 5, except when breaking compatibility is necessary to fix vulnerabilities. The Council also concluded that the language should evolve and promote new features more intensively, while making it easier to access emerging innovations and encourage their adoption.

Contrary to the original

intention of allowing backward-compatibility-breaking changes to be included by default in the Perl 7 branch, the new plan is to gradually transition the Perl 5 branch to Perl 7 without breaking backward compatibility with existing code. The release of Perl 7.0 will not be conceptually different from the next branch of Perl 5.xx.

When enough changes accumulate, the next release of Perl 5.x will be replaced by Perl 7.0, which will be a kind of state snapshot, but will remain fully backward compatible with Perl 5. In order to include breaking changes and tweaks, you will need to explicitly add the "use v7" pragma to the code ". That is, code with the "use v7" pragma can be interpreted as "modern Perl" in which language-breaking changes are available, and without - "conservative Perl", which will remain fully backwards compatible with past releases.

<http://blogs.perl.org/users/psc/2022/05/what-happened-to-perl-7.html>

## RELEASE OF STEAM OS 3.2: 05/27/2022

Valve has introduced an update to the Steam OS 3.2 operating system that comes with the Steam Deck game console. Steam OS 3 is based on Arch Linux, uses the Gamescope composite server based on the Wayland protocol to speed up the launch of games, comes with a read-only root file system, uses an atomic update mechanism, supports Flatpak packages, uses the PipeWire media server, and provides two interface modes (Steam shell and KDE Plasma desktop). Updates are only available for Steam Deck, but an unofficial build of holiso is being developed by enthusiasts, adapted for installation on regular computers (Valve also promises to prepare builds for PC in the future).

<https://store.steampowered.com/news/app/1675200/view/3297210455204145216>

## A HARDWIRED PASSWORD FOR ACCESSING THE USER BASE HAS BEEN REVEALED IN THE LINUXFX DISTRIBUTION: 27.05.2022

Members of the Kernal community have identified an unusually nonchalant attitude towards security in the Linuxfx distribution, which offers a build of Ubuntu with a Windows 11-styled KDE user environment. According to the project's website, the distribution has more than a million users and about 15,000 downloads this week. The distribution offers activation of additional paid features, which is done through the introduction of a license key in a special graphical application.

A study of the license activation application (/usr/bin/windowsfx-register) showed that it includes a hardwired login and password for accessing an external MySQL DBMS, to which data about a new user is added. The detected credentials allow you to get full access to the database, including the "machines" table, which reflects information about all installations of the distribution kit, including

user IP addresses.

Also available is the contents of the "fxkeys" table with the license keys and email addresses of all registered commercial users. It is noteworthy that, in contrast to the claims of a million users, there are only 20,000 records in the database. The application is written in Visual Basic and runs using the Gambas interpreter .

The reaction of the distribution's developers deserves special attention. After the publication of information about security problems, they released an update in which they did not fix the problem itself, but only changed the database name, login and password, and also changed the logic for obtaining credentials and tried to deal with program tracing. Instead of credentials sewn into the application itself, the Linuxfx developers added the loading of database connection parameters from an external server using the curl utility. For protection after startup, a search and removal of all running "sudo", "stapbp" and "\*-bpfcc" processes in the system is implemented, apparently believing that in this way they can interfere with tracing programs.

<https://kernal.eu/posts/linuxfx/>

## RELEASE OF THE DEEPIN 20.6:

06/01/2022

Deepin 20.6 was published, based on Debian 10, but developing its own Deepin Desktop Environment (DDE) and about 40 user applications, including DMusic music player, DMovie video player, DTalk messaging system, installer and Deepin installation center software center. The project was founded by a group of developers from China, but has been transformed into an international project. All code is distributed under the GPLv3 license. The size of the bootable iso image is 3 GB (amd64).

<https://www.deepin.org/en/2022/05/31/deepin-20-6-release/>

## RELEASE OF NITRUX 2.2 DISTRIBUTION WITH NX DESKTOP:

06/02/2022

The release of the distribution kit Nitrox 2.2.0 has been published, built on the Debian package base, KDE technologies and the OpenRC initialization system. The distribution develops its own desktop NX Desktop, which is an add-on for the KDE Plasma user environment, as well as the MauiKit user interface framework, on the basis of which a set of typical user applications is developed that can be used on both desktop systems and mobile devices. To install additional applications, the AppImages self-contained package system is being promoted. Full boot image size is 2.5 GB, and abbreviated with the JWM window manager is 1.4 GB. The developments of the project are distributed under free licenses.

NX Desktop offers a different styling, its own implementation of the system tray, notification center and various plasmoids, such as a network connection configurator and a multimedia applet for volume control and media playback control.

Among the applications created using the MauiKit framework, one can note the Index file manager (Dolphin can also be used), the Note text editor, the Station terminal emulator, the Clip music player, the VVave video player, the NX Software Center application control center and the Pix image viewer.

<https://nxos.org/changelog/release-announcement-nitrox-2-2-0/>

## DISTROBOX 1.3, A TOOLKIT FOR NESTED DISTRIBUTIONS:

06/02/2022

Distrobox 1.3 toolkit has been released, allowing you to quickly install and run any Linux distribution in a container and ensure its integration with the main system. The project code is written in Shell and distributed under the GPLv3 license.

The project is implemented as an add-on over the Docker or Podman, and is distinguished by the maximum simplification of work and setting up the integration of the running environment with the

rest of the system. To create an environment with a different distribution, it is enough to issue a single distrobox-create command without thinking about the subtleties. After launch, Distrobox forwards the user's home directory to the container, configures access to the X11 and Wayland server to run from the container of graphical applications, allows you to connect external drives, adds sound output, implements integration at the level of SSH agent, D-Bus and udev.

As a result, the user can work completely in another distribution without leaving the main system. Distrobox claims to be able to host 16 distributions, including Alpine, Manjaro, Gentoo, EndlessOS, NixOS, Void, Arch, SUSE, Ubuntu, Debian, RHEL, and Fedora. Any distribution kit for which there are images in the OCI format can be launched in the container.

Among the main areas of application are experiments with atomically updated distributions such as Endless OS, Fedora Silverblue, OpenSUSE MicroOS and SteamOS3, the creation of separate isolated environments (for example, to run home configuration on a work laptop),

access to more recent versions of applications from experimental branches of distributions.

<https://github.com/89luca89/distrobox/releases/tag/1.3.0>

## ARMBIAN DISTRIBUTION RELEASE 22.05:

06/03/2022

The Armbian 22.05 Linux distribution has been released, providing a compact system environment for various ARM-based single board computers, including various models of Raspberry Pi, Odroid, Orange Pi, Banana Pi, Helios64, pine64, Nanopi and Cubieboard based on Allwinner, Amlogic, Actionsemi processors, Freescale / NXP, Marvell Armada, Rockchip, Radxa and Samsung Exynos.

The Debian and Ubuntu package bases are used to form the builds, but the environment is completely rebuilt using its own build system with the inclusion of optimizations to reduce the size, increase performance and apply additional protection mechanisms. For example, the /var/log partition is

mounted using zram and stored in RAM in compressed form, flushed to the drive once a day or at shutdown. The /tmp partition is mounted using tmpfs. The project supports more than 30 Linux kernel builds for various ARM and ARM64 platforms.

<https://www.armbian.com/newsflash/armbian-22-05/>

## LINUX PORTED FOR APPLE IPAD TABLETS ON A7 AND A8 CHIPS:

06/03/2022

Enthusiasts were able to successfully boot the Linux 5.18 kernel on Apple iPad tablets based on A7 and A8 ARM chips. Work is currently limited to adapting Linux for iPad Air, iPad Air 2 and some iPad mini devices, but there are no fundamental problems for applying the code to other devices based on Apple A7 and A8 chips, such as iPhone 5S and HomePod, released in 2013- 2014. For newer devices, builds from the Sandcastle project can be used.

The Checkm8 vulnerability is used to unlock the bootloader and

bypass firmware verification (Jailbreak). In its current form, development is still at an early stage, in which kernel loading is supported, graphics acceleration, network functions and sound work, but USB and Bluetooth do not work yet. The next goal of the project is to provide a bootable user environment based on the postmarketOS distribution built on Alpine Linux, the Musl standard C library and the BusyBox utility set.

<https://twitter.com/konradybcio/status/1532106368936706051>

## QT6 PACKAGES PREPARED FOR DEBIAN 11:

06/11/2022

The maintainer of packages for the Qt framework on Debian announced packages of the Qt6 branch for Debian 11. The set included 29 packages with various Qt 6.2.4 components and a package with the libassimp library with support for 3D model formats. The packages are available for installation via the backports system (the bullseye-backports repository).

Qt6 was not originally planned for Debian 11 due to lack of resources, but Qt6 was eventually made available to the Debian stable branch. It is noted that the preparation of packages was a personal initiative of the maintainer, but The Qt Company also expressed a desire to promote the project.

<https://perezmeyer.com.ar/blog/2022/06/10/qt6-in-debian-bullseye/>

## RELEASE OF THE MIDNIGHTBSD 2.2:

06/11/2022

The MidnightBSD 2.2 desktop operating system was released, based on FreeBSD with elements ported from DragonFly BSD, OpenBSD and NetBSD. The base desktop environment is based on GNUstep, but users have the option to install WindowMaker, GNOME, Xfce, or Lumina. A 774 MB installation image ( x86 , amd64 ) has been prepared for download .

Unlike other desktop builds of FreeBSD, MidnightBSD was originally developed as a fork of FreeBSD 6.1-beta, which was

synchronized with the FreeBSD 7 codebase in 2011 and subsequently incorporated many features from the FreeBSD 9-12 branches. For package management, MidnightBSD uses the mport system, which uses a SQLite database to store indexes and metadata. Installing, removing and searching for packages is done using a single mport command

<https://www.midnightbsd.org/notes/>

## **CINNAMON 5.4 DESKTOP ENVIRONMENT RELEASED:** 11.06.2022

**A**fter 6 months of development, Cinnamon 5.4 is out, within which the community of developers of the Linux Mint distribution is developing a fork of the GNOME Shell, the Nautilus file manager and the Mutter window manager, aimed at providing an environment in the classic GNOME 2 style with support for successful interaction elements from the GNOME Shell. Cinnamon is based on GNOME components, but these components are shipped as a periodically synchronized fork with no external dependencies to

GNOME. The new release of Cinnamon will be offered in the Linux Mint 21 distribution, scheduled for release in July.

<https://github.com/linuxmint/Cinnamon/releases/tag/5.4.0>

## **RELEASE OF EASYOS 4.0, A CUSTOM DISTRIBUTION FROM THE CREATOR OF PUPPY LINUX:** 11.06.2022

**B**arry Kauler, founder of the Puppy Linux project, has published an experimental EasyOS 4.0 distribution that combines Puppy Linux technologies with containerized isolation to run system components. The distribution is managed through a set of graphical configurators developed by the project itself. The size of the boot image is 773 MB.

<https://bkhome.org/news/202206/easyos-dunfell-series-version-40-released.html>

## **BOTTLEROCKET 1.8 IS AVAILABLE:** 12.06.2022

**B**ottlerocket 1.8.0 has been published, developed with the participation of Amazon to effectively and safely run isolated containers. The toolkit and control components of the distribution are written in Rust and distributed under the MIT and Apache 2.0 licenses. It supports running Bottlerocket on Amazon ECS, VMware, and AWS EKS Kubernetes clusters, as well as creating custom builds and editions that allow for different orchestration and runtime tools for containers.

The distribution provides an atomically and automatically updated indivisible system image that includes the Linux kernel and a minimal system environment that includes only the components needed to run containers. The environment uses the systemd system manager, the Glibc library, the Buildroot build tool, the GRUB bootloader, the wicked network configurator, the containerd isolated container runtime, the Kubernetes container orchestration platform, the aws-iam-

## **FULL CIRCLE WEEKLY NEWS**



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



authenticator, and the Amazon ECS agent.

The container orchestration tools come in a separate management container that is enabled by default and managed through the API and AWS SSM Agent. The base image lacks a command shell, SSH server, and interpreted languages (for example, no Python or Perl) - admin and debugging tools are moved to a separate service container, which is disabled by default.

<https://github.com/bottlerocket-os/bottlerocket/releases/tag/v1.8.0>

## ALPHA TESTING OF PHP 8.2 HAS BEGUN:

06/12/2022

The first alpha release of the new branch of the PHP 8.2 programming language is available. The final release is scheduled for November 24th. The main innovations already available for testing or planned for implementation in PHP 8.2, for instance:

Separate types "false" and "null" have been added, which can take

only one valid value and are used, for example, to return the function with an error termination indicator or an empty value. Previously, "false" and "null" could only be used in conjunction with other types (for example, "string|false"), but now they can be used separately. There is also the ability to substitute variable values into strings using the expressions "\$ {var}" and \${var} has been deprecated. Support for the commonly used "\${var}" and "\$var" substitutions has been retained. Deprecated\* - partially supported callables that can be called via "call\_user\_func(\$callable)", but do not support calling in the form "\$callable()"

<https://stitcher.io/blog/new-in-php-82>

## YOUTH COMPETITIONS ON LINUX WILL BE HELD:

13.06.2022

On June 20, the 3rd annual children's and youth competitions in Linux - "CacTUX 2022" will start. As part of the competition, participants will have to move from MS Windows to Linux,

keeping all documents, install programs, configure the environment, and configure the local network. Registration is open from 13 to 22 June 2022 inclusive.

The competition will be held from June 20 to July 4 in two stages: qualifying (testing) and final (practical task). There are 2 nominations: "Just for Fun" (in absentia) and "Teen Hacker" (in absentia), and 3 age groups: 10-13 years old, 14-15 years old, 16-17 years old. Working distributions: Calculate Linux, Simply Linux and OpenWRT.

<https://cactux.ru/>

## THE K-9 MAIL PROJECT WILL BECOME THE BASIS OF THUNDERBIRD FOR ANDROID:

13.06.2022

The Thunderbird and K-9 Mail development teams have announced a project merger. The K-9 Mail email client will be renamed "Thunderbird for Android" and will be shipped under a new brand. The Thunderbird project has long

considered creating a version for mobile devices, but during the discussions it came to the conclusion that it makes no sense to split forces and do double work when you can join forces with an already existing close open source project. For the clunky K-9 Mail, joining Thunderbird is beneficial in terms of additional resources, expanding the user base, and speeding up development.

The decision to merge was driven by similar goals and visions from both projects of what a modern mobile email application should be. Both projects are also privacy-conscious, adhere to open standards, and are developed using an open development process.

Before the first release with a new name, K-9 Mail plans to bring the look and functionality closer to the look and feel of the desktop version of Thunderbird. Of the plans to expand the functionality of K-9 Mail, it is noted the implementation of an auto-configuration system for accounts like in Thunderbird, improved management of mail folders, integration of support for message filters, and the implementation of synchronization between the

mobile and desktop versions of Thunderbird.

<https://blog.thunderbird.net/2022/06/revealed-thunderbird-on-android-plans-k9/>

## THE BROWSER-LINUX - LINUX DISTRIBUTION TO RUN IN A WEB BROWSER:

14.06.2022

Browser-linux is proposed for launching a Linux console environment in a web browser. The project can be used to quickly get started with Linux without having to run virtual machines or boot from external media. A stripped-down Linux environment is built using the Buildroot toolkit.

To execute the resulting assembly in the browser, the v86 emulator is used, which translates the native code into the WebAssembly. For storage, the localForage library is used, which works on top of the IndexedDB API. The user is given the opportunity to save the state of the environment at any time and then restore the work from the saved position. The output is generated in a terminal

window implemented using the xterm.js library. udhcpc is used to configure network communication.

<https://github.com/Darin755/browser-linux>

## ORACLE LINUX 9 PREVIEW:

14.06.2022

Oracle has introduced a preliminary release of Oracle Linux 9, based on Red Hat Enterprise Linux 9 and fully binary compatible with it. For downloading without restrictions, an installation iso image is offered, 8 GB in size, prepared for x86\_64 and ARM64 architectures (aarch64). For Oracle Linux 9, unlimited and free access to the yum repository with binary package updates with bug fixes (errata) and security issues is open. Separately maintained repositories with sets of Application Stream and CodeReady Builder packages are also prepared for download.

In addition to the RHEL kernel package (based on the 5.14 kernel), Oracle Linux offers its own Unbreakable Enterprise Kernel 7, based on the Linux 5.15 kernel and

optimized for industrial software and Oracle hardware. The source code for the kernel, including a breakdown into individual patches, is available in the public Oracle Git repository. The Unbreakable Enterprise Kernel is installed by default, positioned as an alternative to the regular RHEL kernel package and provides a number of advanced features such as DTrace integration and improved Btrfs support. Apart from the additional kernel, Oracle Linux 9 and RHEL 9 releases are identical in functionality.

<https://blogs.oracle.com/linux/post/oracle-linux-9-developer-preview-now-available-for-download>

## KDE PLASMA 5.25 USER ENVIRONMENT:

14.06.2022

The KDE Plasma 5.25 custom shell release is available, built using the KDE Frameworks 5 and the Qt 5 library using OpenGL/OpenGL ES for faster rendering. You can evaluate the work of the new version through a Live build from the openSUSE project and a build from the KDE Neon User

Edition project. Packages for various distributions can be found on this page; <https://community.kde.org/Plasma/Packages>

<https://kde.org/ru/announcements/plasma/5/5.25.0/>

## FREECAD 0.20:

14.06.2022

After more than a year of development, the release of the open parametric 3D modeling system FreeCAD 0.20 has been published, which is distinguished by flexible customization and functionality enhancements through the connection of add-ons. The interface is built using the Qt library. Add-ons can be created in Python. It supports saving and loading models in various formats, including STEP, IGES and STL. The FreeCAD code is distributed under the LGPLv2 license, and Open CASCADE is used as the modeling engine. Binaries will soon be prepared for Linux (AppImage), macOS and Windows.

<https://github.com/FreeCAD/FreeCAD/releases/tag/0.20>

## EUROLINUX 9.0:

06/15/2022

**E**uroLinux 9.0 has been published, prepared by rebuilding the source of Red Hat Enterprise Linux 9.0 packages and fully binary compatible with it. Installation images have been prepared for download, 6.5 GB (appstream) and 1.4 GB in size. The distribution is similar in functionality and added innovations to RHEL 9.0.

EuroLinux builds are distributed both for a paid subscription and free. The paid and free subscription builds are identical, build at the same time, include the full set of system features, and allow you to receive updates. The difference between a paid subscription comes down to the provision of technical support services, access to errata files and the ability to use additional packages, including tools for load balancing, high availability and creating reliable storage.

<https://en.euro-linux.com/blog/eurolinux-9-0-released/>

## UBUNTU CORE 22 MONOLITHIC DISTRIBUTION

**AVAILABLE:**

15.06.2022

**C**anonical has published the release of Ubuntu Core 22, a compact version of the Ubuntu distribution adapted for use in Internet of Things (IoT) devices, containers, consumer and industrial equipment. Ubuntu Core comes in the form of an indivisible, monolithic base system image that does not use deb packages. Ubuntu Core 22 images, which are in sync with the Ubuntu 22.04 package base, are prepared for x86\_64, ARMv7, and ARMv8 systems. The release follow-up time is 10 years.

Ubuntu Core serves as the basis for running additional components and applications, which are packaged as self-contained add-ons in the snap format. Ubuntu Core components, including the base system, Linux kernel, and system add-ons, are also provided in snap format and managed by the snapd toolkit. Snappy technology makes it possible to form an image of the system as a whole, without splitting

into separate packages.

<https://ubuntu.com/blog/canonical-ubuntu-core-22-is-now-available-optimised-for-iot-and-embedded-devices>

## GIMP 2.10.32 GRAPHICS

**EDITOR RELEASED:**

06/15/2022

**G**IMP 2.10.32 release has been published. Flatpak packages are available for installation (the snap package is not ready yet). The release mainly includes bug fixes. All feature building efforts are focused on preparing the GIMP 3 branch, which is in pre-release testing .

<https://www.gimp.org/news/2022/06/14/gimp-2-10-32-released/>

## CAMBALACHE 0.10, A TOOL FOR DEVELOPING GTK

**INTERFACES:**

16.06.2022

**C**ambalache 0.10.0 project is available, which develops a rapid interface development tool

for GTK 3 and GTK 4 using the MVC paradigm and the philosophy of paramount importance of the data model. Unlike Glade, Cambalache provides support for maintaining multiple user interfaces in one project. The code is written in Python and is licensed under the LGPLv2.1 license. A flatpak package is available for installation.

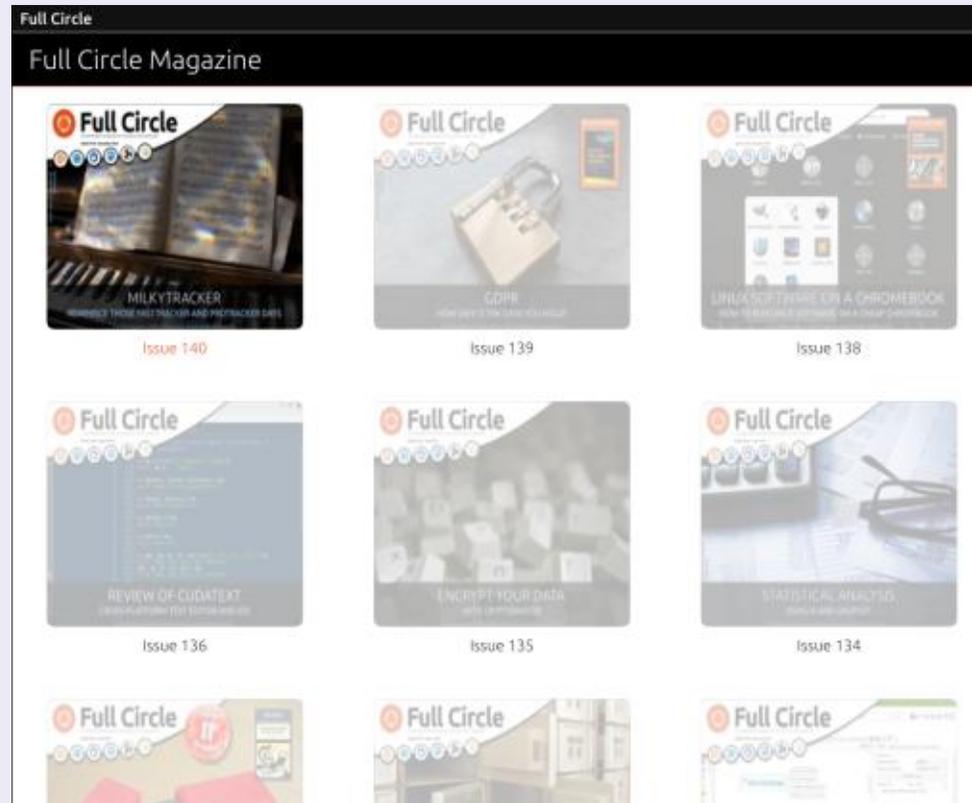
Cambalache does not depend on GtkBuilder and GObject, but provides a data model that conforms to the GObject type system. The data model can import and export multiple interfaces at once, supports GtkBuilder objects, properties, and signals, provides a rollback stack (Undo / Redo) and the ability to compress command history. The cambalache-db utility is provided to generate a data model from gir files, and the db-codegen utility is provided to generate GObject classes from data model tables.

The interface can be generated based on GTK 3 and GTK 4, depending on the version defined in the project. To provide support for different GTK branches, the workspace is formed using the Broadway backend, which allows you to draw the output of the GTK

library in a web browser window. The main Cambalache process provides a WebKit-based WebView wrapper that uses Broadway to broadcast the output from the Merengue process, which is directly responsible for rendering the user-created interface.

<https://blogs.gnome.org/xjuan/2022/06/15/cambalache-0-10-0-is-out/>

## THE OFFICIAL FULL CIRCLE APP FOR UBUNTU TOUCH - UPDATED!



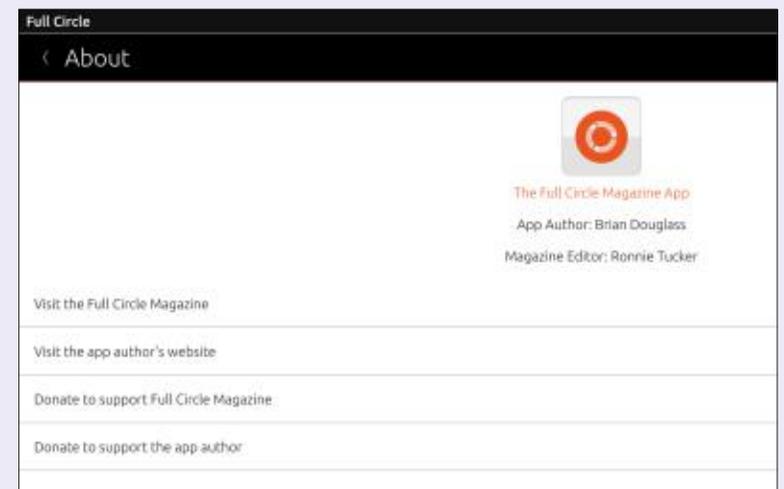
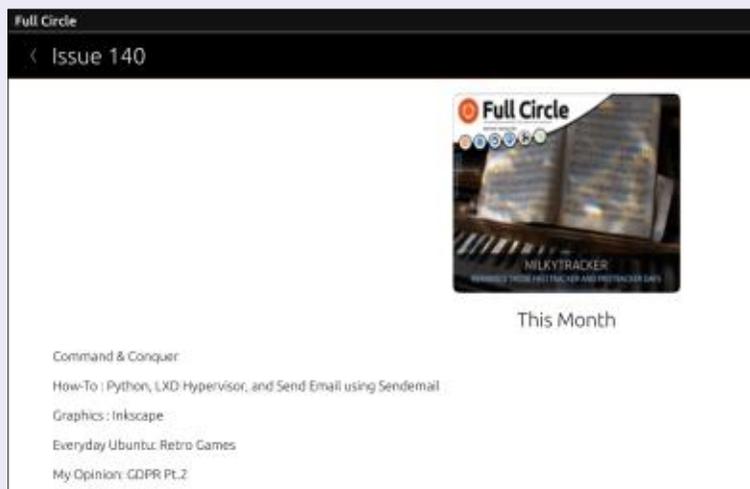
**Brian Douglass** has updated his FCM app for Ubports Touch devices that will allow you to view current issues, and back issues, and to download and view them on your Ubuntu Touch phone/tablet.

### INSTALL

Either search for 'full circle' in the Open Store and click install, or view the URL below on your device and click install to be taken to the store page:

<https://uappexplorer.com/app/fullcircle.bhdouglass>

**HUGE thanks to Brian for this.**



THE

# VIRTUALBOX NETWORKING PRIMER

Connecting and Configuring  
Virtual Machines



Robin Catling

## The VirtualBox Networking Primer

Connecting and Configuring Virtual Machines

*The VirtualBox Networking Primer is a no-nonsense guide for the VirtualBox user taking their next steps into virtual networks.*

*While Oracle VM VirtualBox is a great free tool, the real power of virtualisation comes when you start connecting virtual machines to each other and to the wider world. Software development, sales, education and training are just some of the areas in which network access to virtual machines offers endless opportunities. But the world of computer networks is filled with complex technical jargon.*

*Complete with principles, practice, examples and glossary, The VirtualBox Networking Primer takes the frustration and confusion out of connecting real-world projects.*

Author: **Robin Catling**

Publisher: Proactivity Press

ISBN13 : 9781916119482

Amazon US link:

[https://www.amazon.com/dp/1916119484?  
ref=pe\\_3052080\\_397514860](https://www.amazon.com/dp/1916119484?ref=pe_3052080_397514860)

Amazon UK link:

[https://www.amazon.co.uk/VirtualBox-Networking-Primer-  
Connecting-Configuring/dp/1916119484/ref=sr\\_1\\_1?  
dchild=1&keywords=virtualbox+networking+primer&qid=16002536  
99&s=books&sr=1-1](https://www.amazon.co.uk/VirtualBox-Networking-Primer-Connecting-Configuring/dp/1916119484/ref=sr_1_1?dchild=1&keywords=virtualbox+networking+primer&qid=1600253699&s=books&sr=1-1)

Kobo:

[https://www.kobo.com/us/en/ebook/the-virtualbox-networking-  
primer](https://www.kobo.com/us/en/ebook/the-virtualbox-networking-primer)



# COMMAND & CONQUER

Written by Erik

So, working on a crappy Mac laptop keyboard has me re-learning shortcuts I have not used in donkey's years. I am sure there are newbies out there who don't use them either, as nice keyboards have spoiled us. I also prefer terminal emulators with mouse support. For me, these are just quality-of-life improvements to Linux in general. It's the little things that have me pining for Linux while working on my work Mac laptop. Let me explain myself. I am in no way saying that my Mac's keyboard is bad quality, in fact it is a hundred times better than the brand new Lenovo keyboard I am typing on now, where I basically have to jump off the back of the couch to type a letter and not let it miss, making touch typing impossible. It is the flow I am talking about. If I want to make my browser full screen, I hit F11 and continue. It is clearly marked and situated perfectly above my ring finger on my left hand. Not so with the Mac, I have to take my hand off the mouse as F11 now requires 2 hands as well as squinting to see where it will be on the touch bar. The same goes for

the terminal. It feels like such a step backwards. I am all for one button presses.

Let's do some examples of the common ones, and we can talk about extending it later.

As you can see in the image (below), I made a boo-boo. Of course I can hit the home key or use the arrow keys to fix my mistake. My Mac work laptop does not have

a 'home' key. This is a short command, some of the python scripts that we run are long, with lots of parameters to plug into it, making the arrow keys tedious to say the least. Here you can use the CTRL+a and CTRL+e key combinations to simulate home and end on your keyboard. Go ahead, type something long in your terminal, it does not have to be sensible, a bunch of z's (zzzzzzz) will do fine to illustrate the example.

Use your arrow keys to move your cursor. It may be a block, or an underline, it does not matter. Now press CTRL+e (end) then press CTRL+a (home) and observe your cursor.

The next one I will show you needs a little bit more focus from your side. CTRL+z in your terminal may end up the same as CTRL+c and end your typing, so, to 'undo' something, you need to type CTRL+\_ . This is an underscore, as if you type a minus, your text in your terminal emulator will shrink. (CTRL+ + and CTRL+- are usually zoom commands) add a few x's after your z's that you typed, bonus points if you used CTRL+e to go to the end to type. Now press CTRL+\_ to see them pop out of existence. Now I want you to go to the start again, without using the mouse, the home button or CTRL+a, and then to the end again without using the mouse, CTRL+e or the end button. Say what now? No, I'm not messing with you, unless I am.... Luckily for you, I am not. This is a function controlled by CTRL+xx, so try it now. You may wonder why CTRL+f and CTRL+b

```
Terminal - gewgaw@rooikopstiefkind: ~
X ** X sud gcloud components install docker-credential-gcr

Command 'sud' not found, did you mean:

command 'std' from snap std (1.0.1)
command 'sul' from deb hxttools (20200126-1build1)
command 'sur' from deb subtle (0.11.3224-xi-2.2build3)
command 'sup' from deb sup (20100519-1build1)
command 'sed' from deb sed (4.7-1)
command 'spd' from deb spd (1.3.0-1ubuntu3)
command 'sum' from deb coreutils (8.30-3ubuntu2)
command 'sbd' from deb sbd (1.4.1-3)
command 'sudo' from deb sudo (1.8.31-1ubuntu1.2)
command 'sudo' from deb sudo-ldap (1.8.31-1ubuntu1.2)
command 's3d' from deb s3d (0.2.2.1-2)
command 'snd' from deb snd-gtk-jack (20.1-1)
command 'snd' from deb snd-gtk-pulse (20.1-1)
command 'snd' from deb snd-nox (20.1-1)
command 'su' from deb util-linux (2.34-0.1ubuntu9.3)

See 'snap info <snapname>' for additional versions.
X ** X sud gcloud components install docker-credential-gcr
```

# COMMAND & CONQUER

are not used for forward and backward instead, but it is because those are taken too, they will take you ahead and backwards one word at a time. Quickly type: "The quick brown fox" and navigate with CTRL+b and CTRL+f. Don't just read it, do it please, we need to get that "muscle memory" thing going. This helps when you need to plug in parameters into a copied script you may have just pasted that has different values.

Example:

```
python3 steadyscript.py  
753840 nathan california  
circus-charlie
```

Please type this fictional script and then replace the id with 544384, nathan with mike, and circus-charlie with mad-bob.

Try doing it with the arrow keys only at first and see how long it takes you. Now repeat it using what I have taught you so far.

Nothing we have done is ground-breaking, I will give you a list of the key bindings you can try out on your own. But, trying it out is a must, or it will be forgotten when you go to the next page. You

may also think that you will never use it in your life again, but it can happen. If you work in a server room, and they have one of those mini 30-odd key keyboards that remind you of a ZX Spectrum, that slides into the rack, you will thank me.

You can find all of them by typing:

```
bind -p
```

However, the output looks like garbage to a newbie and may put them off, so I'd rather introduce these gently.

As a quick bonus, if you have nano installed, like every newbie should, you can do a quick launch of your editor by holding down CTRL, then pressing x and whilst still holding CTRL, press e. That is: CTRL+x,e (no comma, it is just to separate the letters for readability).

Did I make a mistake? Let me know at [misc@fullcirclemagazine.org](mailto:misc@fullcirclemagazine.org)

Here is a quick cheat sheet:

```
Ctrl + _      (undo)  
Ctrl + t      (swap two characters)  
ALT + t       (swap two words)  
ALT + .       (prints last arg from the prev command)  
Ctrl + arrow  (move forward a word)  
ALT + f       (move forward a word)  
ALT + b       (move backward a word)  
Ctrl + e      (move cursor to end)  
Ctrl + a      (move cursor to start)  
Ctrl + xx     (flip to the opposite end)  
Ctrl + u      (cuts everything before the cursor)  
Ctrl + k      (cuts everything after the cursor)  
Ctrl + y      (pastes from the buffer)
```

This obviously does not include things like CTRL+r or CTRL+l, these should be second nature to you, even as a newbie.



**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.



Being from Texas, most of us here have a tendency to “change horses in midstream” as the saying goes, and this month, I’m afraid I’m going to have to do just that. I was planning to continue my article from last month (FCM 181) on understanding styles and themes for ttk and Tkinter, and in fact started down that path. However, in working with a user of PAGE for the last few days, trying to solve a problem, I realized that there is an issue out there, lurking and waiting to bite every programmer in their proverbial backsides who uses images and Tkinter in their program creation process. That issue is that we, as programmers, do not know in advance where our end users will run our programs from. Will it be from the Desktop, which is becoming more and more popular? Will it be from the folder that contains the source code? Even if we state how the program should be run, that doesn’t mean that our ultimate end users will pay attention to our requests/demands, and if things don’t fit their expectations, watch out for the

complaints. So, in order to try to help us all be mindful of this pending issue, I’ve decided to press pause for a month and continue our discussion on Styles and Themes next month.

So what brought up this “issue”? Well, the user was trying to use a demo program that I wrote that “shows off” just a few of the capabilities of the widgets that PAGE supports. These can be broken down into 3 groups. There are the “standard” Tk widgets like standard buttons, labels and so on. Then there are the ttk Themed widgets, like the TButton, TLabel, Treeview, TCombobox, etc. Finally there are the “enhanced” widgets that usually have scrollbars built in, like the ScrolledListbox or the ScrolledText widgets. More times than not, these “enhanced” widgets are based on the “standard” Tk widgets, but a handful are based on a ttk widget. Widgets like Tk Radiobuttons and Checkbuttons have a way to change the look of how the widget appears when the program is run, which can involve using custom graphic images, one

for the On state and one for the Off state, in addition to a few extra attribute settings. This allows a “normally ugly and looks like Windows 95” Tkinter program to look clean and fresh and receives a bunch of “Oohs” and “Ahhs” from the end users (and other programmers as well). So when we want to use graphics in our Tkinter programs, we have to be mindful of the location where the program will “live”, and where the ultimate end user will attempt to execute our program from.

I had run into this a long time ago when I created a program for my own use, never really expecting to share it with anyone. The program uses a large number of graphic files, all .png files which are located in a sub-folder of the main source code. When the program was executed directly from the source code folder, everything worked just fine. When I tried to create a link from the Desktop that would call Python with the full path of the source code, it failed. I finally tracked it down to the path to the graphic files “couldn’t be found”. I

tried a number of solutions without success until I stumbled upon a somewhat messy fix, which was to create a complete and fully qualified path which started with “/home/greg/...”. Of course, I hardcoded this in my early development, to save time and energy and eventual hair loss from my pulling them out in great handfuls. I went on with my development, not really thinking of the fact that by doing it that way, not only could I not share the program with anyone, but I couldn’t even move the program from its hard-coded location. My mind, at the time, was focused on getting the thing to work, not the sloppy programming methods I was employing. Other things came up and development of this program, which worked for the limited things I wanted to accomplish, was shelved and all of what I had learned went on that shelf as well.

Jumping back to the current issue, this was one of the problems that was plaguing this user when he tried to run the demo on his Raspberry Pi from his desktop.

There was one graphic in the program (while there were a number of other graphics there as well), that was causing the program to fail for him. Actually there were other images that were also a problem, but this was the first one that the program tried to load. After a long troubleshooting session, I finally realized what was going on and asked the user to try to run the program from the source code folder. He had some other issues that prevented it, but when push came to shove, it would run correctly.

Trying to remember what the ticklers in my old brain were trying to tell me about the past lessons learned, I attempted to come up with a properly “pythonic” method to dynamically set a path statement that would keep everything happy, no matter where the program was started from, and no matter where it existed. Digging into the dusty resources that I had here and out on the Internet about the issue, I threw together a very quick and VERY dirty demonstration that not only showed the issue but presented some helpful information (albeit redundant in nature) to someone wondering about a quick but clean method

```
os.path.abspath(filename) returns the filename's full path.
```

```
pathlib.Path().absolute() returns the full path.
```

```
pathlib.Path(__file__).parent.absolute() returns the directory from the path.
```

```
os.path.dirname(os.path.abspath(__file__)) returns the file's full path and dirname() returns the directory from the full path.
```

```
os.path.abspath(os.getcwd()) returns the current working directory.
```

```
os.path.dirname(os.path.realpath(__file__)) removes any symbolic links (if present) then returns the path.
```

around the problem.

## THE TOOL

Since I was trying to create a GUI tool to easily point out the issue, of course I created a quick GUI in PAGE, not really trying to adhere to good GUI creation concepts.

I decided on 6 different (but very similar) Python library calls to help determine the information that will need to be presented in order to run a Python script not only from the source code folder, but also from /home and /Desktop, and wherever else anyone could possibly think of to attempt to run the program.

Of course, the GUI would need to provide a quick graphic representation showing either the

success or failure of loading an image into a Tkinter widget as well as a quick indication of what each of the 6 different function calls returned, so I (or anyone else) could quickly decide on a solution.



When run directly from the source code folder, you can see that no matter which of the 6 system calls I made, they all returned the

same information, which, on many levels, was quite a comfort for me. However, when the program is run from /home or /Desktop, the



difference is shown.

Three of the system calls ended up returning the same information, and the other three returned a different result, but all three of those were consistent in their

returned data.

Here (previous page, top right) is a quick look and description of each. Honestly there are dozens more ways out there to do this, so if you want to try others, feel free. I'm just here to get the thought processes flowing.

So there are 4 functions from the `os.path` library and 2 from the `pathlib` library. When the program is run from a location other than the source folder, the three that return just the location of where the program is run from are:

```
os.path.abspath(filename)
```

```
pathlib.Path().absolute()
```

```
os.path.abspath(os.getcwd())
```

This means that for this specific use case, these three system calls can't be used for our purposes.

Of the remaining three choices, any one of them returns the full path to our source folder, which is what we really want. We can always assign this to a variable for the path and append the path to our local image folder and the filename.

Since this is a PAGE program and a very simple one at that, I decided to put all of the code in a function called "startup" which will get run just before the GUI is actually shown to the user. This includes trying to load both of the images as well as obtaining the path from the 6 system calls and loading a Text widget and the two dynamic text labels. The call to the startup function is the next-to-last line in the main function that PAGE provides.

Of course, we have to import the `os` and `pathlib` libraries into our program.

```
def startup():
```

```
    import os, pathlib
```

At this point, I assign a variable name (somewhat explicit to what it is) from each of the 6 system calls, and then print the value of each of the variables using a f-string formatted string (top right).

After looking at the results when I ran it from /Desktop, I decided on using these two variables to provide what the program thinks is the proper

```
abspath1 = os.path.abspath('')
abspath2 = pathlib.Path().absolute()
abspath3 = pathlib.Path(__file__).parent.absolute()
localpath = os.path.dirname(os.path.abspath(__file__))
# 'cwd' stands for Current Working Directory
cwd = os.path.abspath(os.getcwd())
realpath = os.path.dirname(os.path.realpath(__file__))
print(f'Abspath1: {abspath1}')
print(f'Abspath2: {abspath2}')
print(f'Abspath3: {abspath3}')
print(f'LocalPath: {localpath}')
print(f'Current Working Directory: {cwd}')
print(f'Real Path: {realpath}')
```

information (localpath and `abspath1`). The localpath variable (`localpath = os.path.dirname(os.path.abspath(__file__))`) is the information we will eventually use. But I'm getting ahead of myself and have spoiled the surprise. Anyway, I then use the `.set()` method of the two text labels in the form.

```
# Load the two labels with the paths
```

```
_w1.LocalPath.set(localpath)
```

```
_w1.ProperPath.set(abspath1)
```

At this point, I can define the image name, which includes the path (located from the source directory) and filename.

```
# define the image name
```

```
imgname = '/images/icons/document.png'
```

Now, we can try to load the images into the two Label widgets that we use to show the graphics. I say "try" since I know that if the program is run from /Desktop, it will fail. We'll trap that failure and show a messagebox with an error, just to be kind (code shown next page, top right).

Please notice that I didn't worry about any possible errors with the "localpath", since it's a fully qualified path and as long as:

- I type in the correct graphic filename and
- The graphic exists, then there won't be a problem loading that graphic. I know that I'm being overly optimistic, but that's just me.

The last thing I do is load the ScrolledText widget with the

resulting outputs of each of the variables. We have to use the `.insert()` method, with the position that we want to add the text and then the data we want to insert. Since each line ends with a “\n”, and since the Text widget remembers the last place something was placed, it’s just an easy job to use the `Tk.END` (`PAGE` now imports the `Tk.Constants` module) to define the “where”, and the f-string formatted data as the “what”, and let Tkinter deal with the “how” (shown bottom left).

That’s it. So the bottom line is: if you are going to combine Tkinter and Graphics and Python, you probably should define the fully qualified path as the output from a call to `os.path.dirname(os.path.abspath(_file_))`.

## QUICK UPDATE

I did a quick writeup to show the results to the user as well as Don

```
_w1.Scrolledtext1.insert(END, f'abspath1: {abspath1}\n')
_w1.Scrolledtext1.insert(END, f'abspath2: {abspath2}\n')
_w1.Scrolledtext1.insert(END, f'abspath3: {abspath3}\n')
_w1.Scrolledtext1.insert(END, f'localpath: {localpath}\n')
_w1.Scrolledtext1.insert(END, f'cwd (Current Working Directory): {cwd}\n')
_w1.Scrolledtext1.insert(END, f'realpath: {realpath}\n')
```

```
# create temporary variables for the graphics so that Python's
# garbage collection doesn't try to destroy them before they are seen.
global tmp, tmp2
# Try to set the first image
try:
    tmp = tk.PhotoImage(file="." + imgname)
    _w1.Label1.config(image=tmp)
except:
    print('Could not load image')
    titl = 'ProperPath Demo'
    msg = f'Could not load image from {abspath1}\n(variable abspath1)'
    messagebox.showerror(titl, msg, parent=root, icon=messagebox.ERROR)

tmp2 = tk.PhotoImage(file=str(localpath + imgname))
_w1.Label6.config(image=tmp2)
```

(The author of `PAGE`). Don responded quickly with a fix in the form of a new alpha version of `PAGE` for me to test. The result of this new cut provides yet another option for `PAGE` users (and can be used by other Python programmers as well. In `PAGE`, any embedded graphics included at design time are handled in the GUI file. His fix looks something like this...

```
_script = sys.argv[0]
_location =
os.path.dirname(_script)
```

Since this is a global variable by

default, the `_location` variable is available to the rest of the project as `projectname._location`. This makes it simple to handle images within the `_support` module. If you wish to create a simple global for an image path in your project, you can do something like this...

```
location =
test1._location

global ImageDir

ImageDir =
os.path.join(location,
"images", "icons")
```

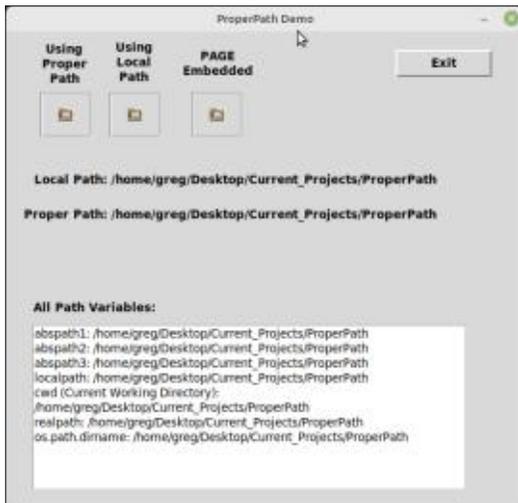
Then when you need to assign

an image, you can use a simple definition anywhere within the project `_support` file.

```
my_file =
os.path.join(ImageDir,
"folder.png")
```

This is not limited to `PAGE` or images. Assume you want to use a database in your Python script. You must point the program at the database file. By using this method, it gives you a quick way to set the path to the database without worrying about where the user is running your program from (image is shown on the next page, top left).

I have added my project and code to my github repository at <https://github.com/gregwa1953/FCM-182-Python>.



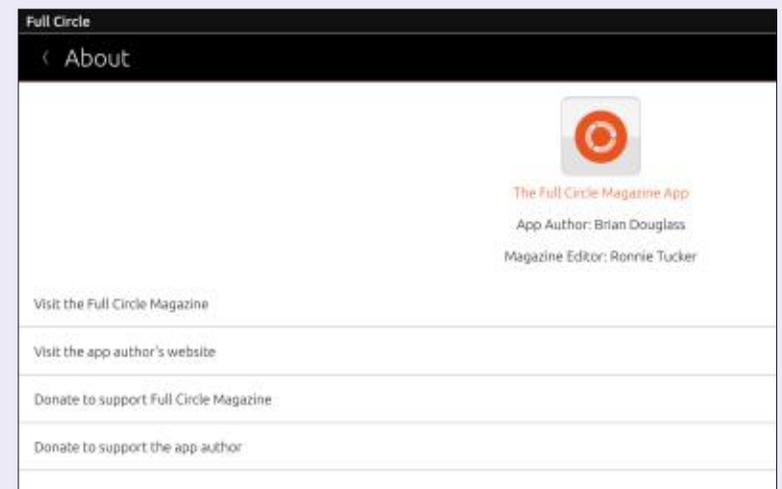
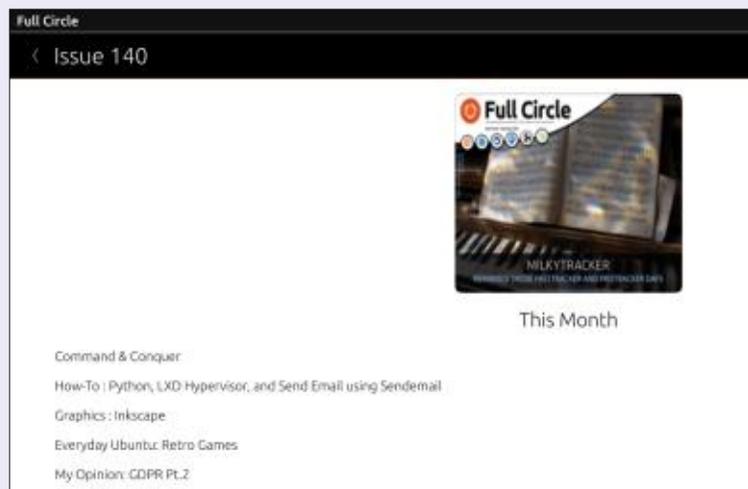
I promise I will REALLY try to continue the Tkinter Styles and Themes discussion next month!

Until next time, as always; stay safe, healthy, positive and creative!



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

## THE OFFICIAL FULL CIRCLE APP FOR UBUNTU TOUCH



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

### INSTALL

Either search for 'full circle' in the Open Store and click install, or view the URL below on your device and click install to be taken to the store page:

<https://uappexplorer.com/app/fullcircle.bhdouglass>

**HUGE thanks to Brian for this.**



# HOW-TO

Written by Erik

# Blender Pt.7

**F**ire up Blender and let's start! Hopefully you now have something that is starting to resemble Tux or the cartoon penguin of your choosing. Why don't we pull out all the stops and give our penguin some whiskers? (Those yellow tufts on the head).

With what I have taught you so far, add a cube and move it to an open spot, scale it down, use all 3 axes to resize it to look like a ruler (bottom left).

Once your whisker looks a bit like mine, use the rotate button or

the R-key to rotate it. The catch is that if you are a noob, you may not get the hang of rotating on an axis. Click on the rotation point and you should see three rotation lines. Click, and hold, and then move on any of those, will only move on that plane.

In this image (bottom right), you can clearly see red arcing, green vertical, and blue horizontal. Just remember, yours may not look like mine as your penguin may be facing the other way. However, the principle is the same. Move it more or less in place. Now use the mirror

technique from the last issue to make two.



Take a look at this penguin, the eyebrows seem to go 45 degrees up then 45 degrees down, so we need to rotate our start to 45 degrees. They don't touch, but they

are mirrored. That said, feel free to give your penguin a uni-brow, it is a cartoon of YOUR choice. I just want to teach you a tool we have not used yet, that is very handy. Again, be careful not to move the brow in edit mode as opposed to object mode, when you want to mirror something or the mirroring will be warped.

**Tip:** You will know this when the orange dot in the center does not move with the object.

Remember this is how we mirrored the eyes. Move it into



# HOWTO - BLENDER

position. Your penguin may look more like a pokemon, but we will get there.

We will make the blend-file available if you get stuck.

Once you have them in place (bottom left), we can start the next phase. If you have been following along since the beginning, you may have noticed that there is a bend modifier. This is a great tool, but newbies have issues getting their heads around it. You need to realize where your beginning plane is as well as what blender will be using as the plane to bend things around. As much as I would like to go that route, it will take too long to explain, so instead we will use the

loop cut tool in the side menu. It is the second last block before the solid one, which looks like a block cut in half, the shortcut key is ctrl+r. When placing a cut to create new planes, you can use your mouse wheel to create more cuts, if you will, but in our case we need only one. Select the massive eyebrow and make sure you are in edit mode. Select loop cut or press ctrl+r. Now move your mouse around the massive eyebrow and see the yellow cut move, horizontally or vertically slicing the mesh.

When you place your loop cut, keep holding down the left mouse button and you should see arrows that allow you to slide the cut along

the opposite axis that you are cutting. Slide the cut down a bit so that it is still within the "face" area. Press G to move the eyebrows to make a 45-degree bend.

I just make sure mine is horizontal as in the picture bottom right (it does not have to be precisely 45 degrees). Press enter when done. Press A to make sure the whole one eyebrow goes orange and click on rotate. You should see this:

As you can see (next page), I can now grab it by the red arch and twist them down to form the eyebrow as it should be. Don't worry if they touch, you can just move them apart on the one axis (Y

for me). Move them until you are satisfied.

Don't worry about the size, we can address that when we make some tufts. Yes I know it looks more like Mr Potatohead, but bear with me (I promise we will end up with a penguin... or an angry bird... just kidding). Like everything else, you start with a base layer and build up. We will work our way down the body with wings and feet. Again, we can simply mirror those. I will add another screenshot from a different angle for you to see where we are at.

With lots of images, I have hit my limit for taking up space in the magazine, hope to see you next



# HOWTO - BLENDER

issue ready and eager.

Was anything unclear, do you know an easier way? Let us know: [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.



Tables were introduced in Part 5. To review, here (top right) is a simplified version of the code needed to produce the table on p. 23 of FCM#171.

This will produce a table without the title and without the column for minimum temperatures. There are also no Fahrenheit temperatures and no degree symbols. There is one column for each of the four months and one row for each municipality. To get the fancier features we have at least two choices. We could code the fancy features in Latex or we could build the table in a spreadsheet and export it to Latex. Since the point of these articles is to help you learn Latex we will choose the first alternative.

Converting tables to Latex:

- For those who like using spreadsheets there is an Add-In for Excel that will export a selected block of cells into a CSV file that is compatible with Latex.
- There is an extension for LibreOffice Calc called calc2latex but it has not been updated since

```

\subsection{Tables}
\begin{table}
\begin{tabular}{|l|c|c|c|c|}
\hline\hline Municipality & Jan & Apr & July & Oct\ \ \hline
Prince Rupert & 5.6C & 10.2C & 16.2C & 11.1C \ \ \hline
Tofino & 8.3C & 11.9C & 18.9C & 13.6C\ \ \hline
Nanaimo & 6.9C & 14.1C & 23.9C & 14.6C\ \ \hline
Victoria & 7.6C & 13.6C & 22.4C & 14.2C \ \ \hline \hline
\end{tabular}
\end{table}

```

2008. Apparently it worked with LibreOffice 2. I tried it in LibreOffice 7. First it refused to run because of a coding error and then it crashed Calc.

- You could build the table in Calc and then Save As a csv file. Then import the csv file into Latex.
- You could build the table in Calc and export into a graphic file format, jpeg/jpg or pdf are acceptable in Latex. Then import the graphic into your Latex document.
- You can build this table in LibreOffice Write since it is just text and values. (Tables that require calculations cannot be built in Write.) The WritertoLatex extension works well in Write although it will generate a tex file that may contain more complex Latex instructions than required.

```

\subsection{Tables} %Optional for Latex
\begin{table} %Required for Latex
\begin{tabular}{|l|c|c|c|c|c|c|c|c|} %Required by Latex
\hline \hline %Optional for Latex
Municipality & January & & April & & July & & October & &
& Max & Min & Max & Min & Max & Min & Max & Min
Prince Rupert & 5.6 °C & -0.8 °C & 10.2 °C & 2.5 °C & 16.2 °C &
& 10.5 °C & 11.1 °C & 4.9 °C
Tofino & 8.3 °C & 2.3 °C & 11.9 °C & 4.0 °C & 18.9 °C & 10.5
°C & 13.6 °C & 6.3 °C
Nanaimo & 6.9 °C & 0.1 °C & 14.1 °C & 3.9 °C & 23.9 °C & 12.3
°C & 14.6 °C & 5.2 °C
Victoria & 7.6 °C & 1.5 °C & 13.6 °C & 4.3 °C & 22.4 °C &
11.3 °C & 14.2 °C & 5.7 °C
\end{tabular}
\end{table}

```

In this example (above) I have replaced the code from Part 5 with the same table built in Calc and saved as a csv file.

I replaced the commas in the generated CSV file with space&space. Do that in a text editor in the CSV file so you do not replace commas in other parts of

your Latex document. As noted in earlier issues, Tex / Latex requires either two back slashes or two presses of the <Enter> key to generate a line break. In a table, a line break moves down to the next row in the table.

This is an adequate table, roughly 50% of the desired result.

Average Temperatures in Four BC Locations

Municipality	January		April		July		October	
	Max	Min	Max	Min	Max	Min	Max	Min
Prince Rupert	5.6 °C	-0.8 °C	10.2 °C	2.5 °C	16.2 °C	10.5 °C	11.1 °C	4.9 °C
Tofino	8.3 °C	2.3 °C	11.9 °C	4.0 °C	18.9 °C	10.5 °C	13.6 °C	6.3 °C
Nanaimo	6.9 °C	0.1 °C	14.1 °C	3.9 °C	23.9 °C	12.3 °C	14.6 °C	5.2 °C
Victoria	7.6 °C	1.5 °C	13.6 °C	4.3 °C	22.4 °C	11.3 °C	14.2 °C	5.7 °C

The goal is a table like this (above). (If we wanted to get very fancy we could add the Fahrenheit temperatures as a separate line in each cell.)

Two things to do next:

- Set the widths of all the columns.
- Merge the pairs of columns for each month.

To set column widths, this code is altered: `\begin{tabular}{|l|c|c|c|c|c|c|c|}`

Keep the alignment instructions, the “l” and the “c”, and add a new instruction “p” with a size and a unit. I am going to set the Max and Min columns to 1.5 cm and the remaining width to the left hand column. (Other units are available, investigate those yourself.)

```
\begin{tabular}{|lp{2.4cm}|
cp{1.5cm}|cp{1.5cm}|cp{1.5cm}|
cp{1.5cm}|cp{1.5cm}|cp{1.5cm}|
cp{1.5cm}|cp{1.5cm}|}
```

If you do not like the vertical lines between columns remove the “|” in the `\begin{tabular}` command.

Now comes the tricky part: merging the four pairs of Max-Min columns and keeping the eight columns of temperatures in the correct places. Here is the start of the new line of code with explanation.

```
Municipality & \multicolumn{2}
{c}{January} &
```

Municipality is the text for the current Row 1 Column 1 cell. (R1C1). The ampersand “&” indicates the start of the next cell in this row.

`\multicolumn` is followed by three arguments.

- The first argument {2} indicates how many columns are to be merged.
- The second one {c} indicates the alignment of the text (l, c, r are

possible).

- The third {January} is the contents of this multicolumn cell.

Now you should understand everything in the following line of code. The other three columns, April, July and October, follow the same pattern as January.

```
Municipality & \multicolumn{2}
{c}{January} & \multicolumn{2}
{c}{April} & \multicolumn{2}
{c}{July} & \multicolumn{2}
{c}{October} \\
```

(Remember the double back-slash indicates the end of the row.)

Make sure the total number of merged and not-merged columns in the row with the multicolumn command matches the number of columns in the `\begin{tabular}` command. In this row we have 1+2+2+2+2 = 9 and the `\begin{tabular}` command has 1 – l and 8 – c which also equals 9.

We need to add a title to our table and then we will be done. That can be done using the `\caption` command. That will automatically add the word “Table” and a sequence number, something like “Table 1”. Since this is a one page – one table document, we do not

need Table numbering. It can also be done by adding a multicolumn row before the line starting “Municipality”

`\multicolumn{9}{c}{Average Temperatures in Four BC Locations}` should work.

The test is always: will the code compile and generate the desired layout in the PDF file.

## PLEASE NOTE:

The `\multicolumn` command applies only to the row in which it appears. There is a `\multirow` command which requires the use of the `multirow` package. You can investigate that if you wish.

There are at least two other ways to merge cells in a Tex table.

Next issue: packages in Latex / Tex

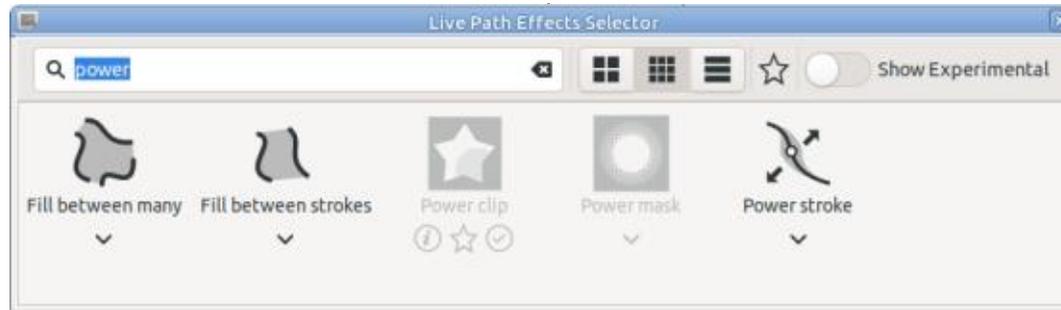


**Robert** has been involved with computers since dBase IV and Novell Netware 2. He recently retired from over twenty years teaching computer skills to college students.



Right on schedule, Inkscape 1.2 was released last month with a lot of new features, and updates to the existing UI. I will be covering everything in detail in this column, but not just yet. In the meantime, if you want a good overview of the headline features, I strongly recommend taking two minutes out of your day to watch the very professionally produced official release video: [https://www.youtube.com/watch?v=1U4hVbvRr\\_g](https://www.youtube.com/watch?v=1U4hVbvRr_g)

For now, these articles are still working through the many new Live Path Effects (LPEs) that were added with Inkscape 1.0 and 1.1. The topic for this instalment is a pair of new LPEs – “Power Clip” and “Power Mask” – which I first mentioned back in part 101. That article detailed the use of the new “Inverse Clip” and “Inverse Mask” menu entries, with little more than a scant reference to the fact that they’re actually implemented as LPEs. Now it’s time to dig into the effects that back these capabilities in a little more detail.



## POWER CLIP

I won’t sugar coat this: I think the name of this LPE is making a very bold claim that is far from matched by reality. As far as I can tell, this effect usefully does one and only one thing, and doesn’t really deserve the “Power” prefix at all. The only practical use for this LPE is to create inverse clipping paths.

Adding this effect to a path works a little differently to almost every other LPE. You can’t simply select a path and add the Power Clip effect from the usual dialog. If you try, you’ll just find that the option is disabled (as is Power Mask, for similar reasons).

A clipping path requires one other element to act on – the thing

you’re trying to clip. That single element could, of course, be a group consisting of several other items, which allows complex designs to be easily clipped. But the clipping path itself is applied to only one element or group.

With this in mind, you might think that this LPE will become available if you have two items selected. In practice, however, the Path Effects dialog itself will chastise you with an “Only one item can be selected” message, and the “+” button will be disabled to prevent you even opening the Live Path Effects Selector dialog. How, then, do we apply this LPE in the first place?

There are actually two methods:

- The first is to apply it directly using the Object > Clip > Set

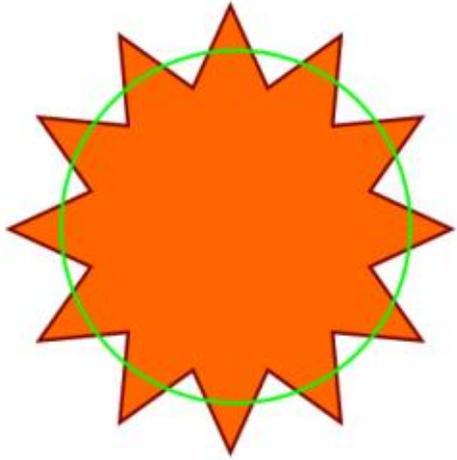
Inverse (LPE) menu entry that I discussed in part 101.

- The other is to apply a normal clip, either via the context menu or using the Object > Clip > Set menu entry, then use the Path Effects dialog to add the LPE as usual.

Yes, if you have an already clipped object selected, only then will you be able to add this LPE in the normal manner.

Whichever approach you take, this LPE really, really wants to create an inverted clip. If you add it directly via the menu entry, then that’s what will happen, as you would expect. Adding it via the dialog to an already clipped object, however, will immediately invert the clip that you’ve already applied – which might be a little more surprising if you’re not expecting it.

As a reminder, a normal clip preserves everything inside the path, and hides the content outside. An inverse clip, therefore, hides everything inside the path but preserves anything outside, per the image below.

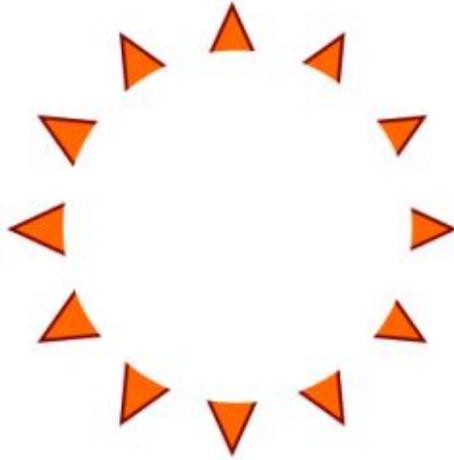


If you really want a normal clip, then you can uncheck the “Inverse clip” option in the LPE’s parameters – though doing so raises the obvious question of why you want to use the LPE at all in that case.

## Power clip

- Inverse clip
- Flatten clip
- Hide clip

Perhaps the “power” in this LPE actually comes from the other two parameters? Well, the “Hide clip” option simply modifies the clipping path to remove the nodes that actually do the clipping – again, raising a question about why you wouldn’t just remove the clip entirely. As for “Flatten clip”: this is



another entry in my box of LPE mystery parameters that appear to do something, but it’s not entirely clear quite what that something is. My own experiments with various combinations of objects and groups, primitives and paths, have failed to present me with any situation in which it does something useful. As usual, if you have any idea of how it’s meant to be used, please do get in touch.

One final important note about this LPE is how to go about removing it. If you only want to temporarily stop it being applied, then the usual approach with an LPE is to toggle the visibility icon (the “eye” image) in the Path Effects dialog. This may not, however, work as you expect. It will remove the inverting effect of the

LPE, but still leave your object with the non-inverted clip applied. If you really want to see the object with no clip at all, then you’re back to using the “Hide” option in the LPE’s parameters. This feels a little awkward to me, as it requires users to understand too much about the implementation of clipping masks in SVG to fully appreciate why the normal visibility toggle doesn’t work the way they might expect.

Permanently removing this effect is even worse. Should you be foolish enough to delete the effect from the Path Effects dialog, as you might usually do, then you’re likely to find that your clipped objects disappear as well – almost certainly not what you wanted! Instead you have to release the clip using the Object > Clip > Release menu entry, or the context menu alternative. Even that comes with a sting in the tail: your original clipping path will also be deleted, so if you wanted to retain both that path and the object being clipped, you’re out of luck.

With that exhaustive examination of this “power” LPE, I’ve come to the conclusion that it serves only one useful purpose: to simplify the task of punching a hole

in another object using a clipping path. To be fair, I think this is an exceptionally useful ability. I’m just not sure it warrants the “power” prefix, rather than simply being called “Inverse clip”. As useful as it is, do be aware of the problems and limitations that come with it. If you’ve got enough experience with Inkscape to be able to make your own inverse clipping paths, as I described way back in part 13, perhaps sticking with the old-fashioned approach is still the safer option.

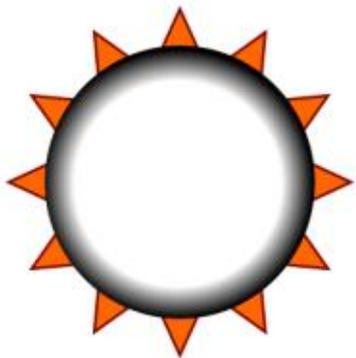
## POWER MASK

Masks are often thought of as a more “analogue” version of clipping. Whereas clips provide hard edges and a binary visible/hidden state for each part of the clipped object, masks allow for gradients and blurs, with every part of the masked object having its opacity determined over a continuum according to the colors used in the mask. But when it comes to the Power Mask LPE, the behaviour and usage compared with the Power Clip effect is quite different in many ways.

I prefer to keep my masks in

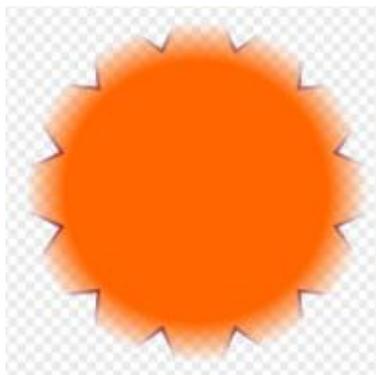
# HOWTO - INKSCAPE

shades of gray to provide clear control over their effects. A typical mask would use white for those areas that are to remain 100% opaque, black for those that are to become completely transparent, and intermediate shades for levels of opacity in-between. Any transparent areas, including those outside the mask shape, are also rendered as transparent once the mask is applied. With that refresher done, here's the shape and mask we'll be experimenting with today.

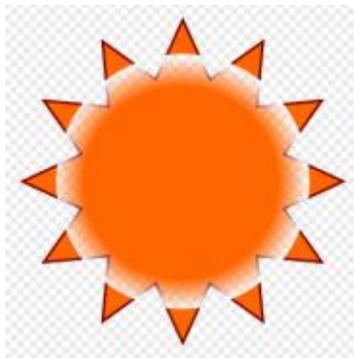


When applied as a normal mask, the white center to the design should ensure that the middle of the star remains solid, while the gradient out to the black edge will fade out the points of the star long before we reach their ends. Selecting both the star and the mask, then using the "Set Mask" context menu entry (or Object > Mask > Set) does, indeed, give the

result we would expect (shown against a chequerboard background so you can see which parts are translucent).



What would you expect the result to be if, instead, we use Object > Mask > Set Inverse (LPE)? Based on the behaviour of the Power Clip effect, you might imagine that the middle will be punched out of the star, leaving the points in place but fading towards a large central hole. That's certainly what I expected the first time I used this effect, but the actual outcome is somewhat different.



Let's take a closer look at the LPE's parameters to work out exactly what's happening here.

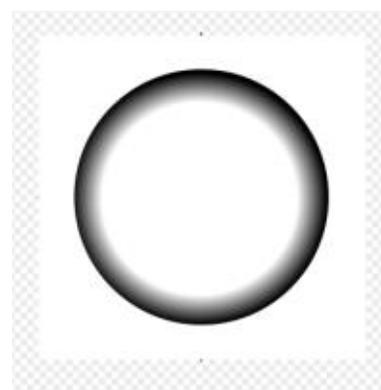
## Power mask

- Invert mask
- Hide mask
- Add background to mask

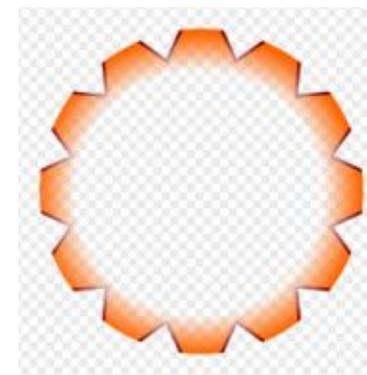
Background color and opacity



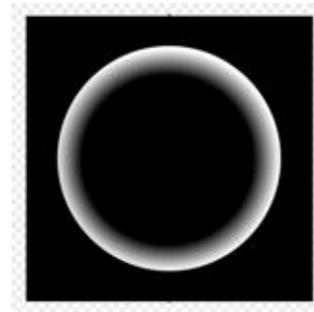
Interestingly, despite having selected "Set Inverse (LPE)", the "Invert mask" option is not checked. Instead all the hard work is being done by the "Add background to mask" checkbox, and the color picker below it. This has the effect of adding a flat colored background to your mask, which covers the bounding box of the element you're masking. In this case, it adds a white background which combines with our original mask to produce an effective mask that looks like this.



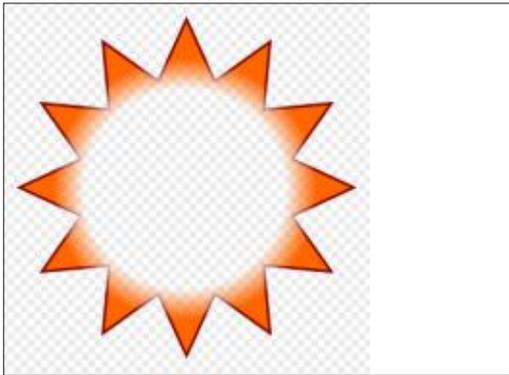
With that in mind, the end result is a little more understandable. But it's not exactly what I would expect from a menu entry that bills itself as an "inverse mask". Perhaps if we enable the "Invert mask" option, we'll get something closer to our expectations...



Hmm... not really. The problem now is that we've inverted every part of our mask – swapping black for white, light gray for dark gray, and so on – but that also includes the color of the background we've added. Now, therefore, the mask looks like this:



Again this explains the output we're seeing, but it's still not really what we had expected from an inverse mask. What we need is the hole in the middle from this version, but with the points of the stars still being visible, as we had in the previous one. In other words, we want a black center fading to a white shape that continues to fill the whole bounding box. The way to achieve that is to change the background color to black, so that the "Invert mask" checkbox has the effect of converting it to white. With that change, we finally get the look I was expecting from the outset.



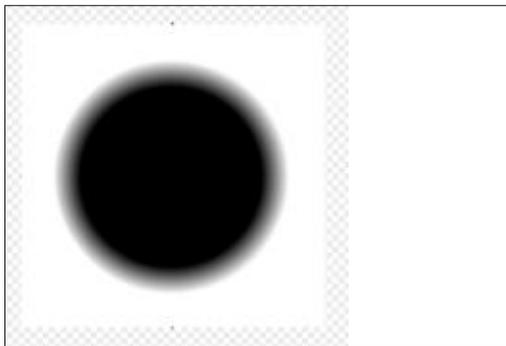
To summarise, in order to create what I would consider to be the inverse of my mask, I had to do the following:

- Draw the mask
- Apply it to the object using

- Object > Mask > Set Inverse (LPE)
- Open the Live Path Effects dialog to access the parameters
- Set the "Invert mask" option
- Ensure the "Add background" option is checked
- Set the background color to black

That really is a lot of work, and it's clear that the "Set Inverse (LPE)" option didn't really do much to help us out. My advice, therefore, is to skip this LPE entirely, and just construct the mask you need with the right colors from the outset. Here's what I would actually do to achieve the same result:

- Draw a white rectangle that covers the star
- Draw a black circle in the middle
- Blur the circle, or give it a black-to-white gradient to create the soft edges
- Group the circle and rectangle to create the final mask
- Select both the mask and the star, then use Object > Mask > Set



## UPDATE:

via [@inkscape on Twitter](#):

There's a bug in Inkscape 1.2 that could destroy gradients, clips & clones in a drawing. You'll only notice it happened after saving file & later opening it again. To work around bug DO NOT use copy-paste while Export dialog is open! The bug will be fixed in Inkscape 1.2.1.

For more details on the bug, head here:

<https://gitlab.com/inkscape/inkscape/-/issues/3600>

Admittedly it's barely any fewer steps, but I'll wager that this approach is a lot more intuitive to anyone with even a little experience using Inkscape.

And there you have these two new "power" LPEs which, on the surface, promise so much, yet deliver so little in reality. The Power Clip is potentially useful, but may create problems when you want to release the clip later. The Power Mask just doesn't do anything that you can't achieve by hand almost as easily, if not moreso. They're both useful tools to know about, though – if only so that you understand how to achieve the same results without having to get the LPEs involved at all!



**Mark** uses Inkscape to create comics for the web ([www.peppertop.com/](http://www.peppertop.com/)) as well as for print. You can follow him on Twitter for more comic and Inkscape content: [@PeppertopComics](#)

# The daily waddle

I THINK MY WIFE IS A  
WINDOWS UPDATE... I  
KEEP HAVING TO SAY,  
NOT NOW!

OH DEAR...





I recently was able to pick up seven 2009 vintage Apple iBooks from eBay for about \$75. It looks like four of them will need repairs or at least an OS install, one appears to have the screen backlight out, so it will only provide a dull, barely functional display, and two of them needed nothing but an OS installation. I decided to dedicate those two as Linux machines (these are the first model of Mac notebooks built with Intel processors), so I'll be talking more, soon, about the "UbuntuBook project". For now, though, let's take a look specifically at the Ubuntu Software Center, as I've been using it a lot to install applications on these two machines recently, and have some opinions fresh in mind.

## UBUNTU SOFTWARE CENTER

The idea of the Ubuntu Software Center is definitely consistent with current trends towards having software installed from a 'software store'. The application will show up by default on the Control Strip (the list of icons on the left side of the screen),

as this icon:

Click it, and you'll see the main initial interface for the Ubuntu Software Center:



At the top, you see highlighted applications that change periodically. Here it's highlighting 'Slack'. There are arrows at either end of that panel that will let you navigate back and forth to see a

few currently highlighted programs (or, if you wait long enough, they'll change on their own).

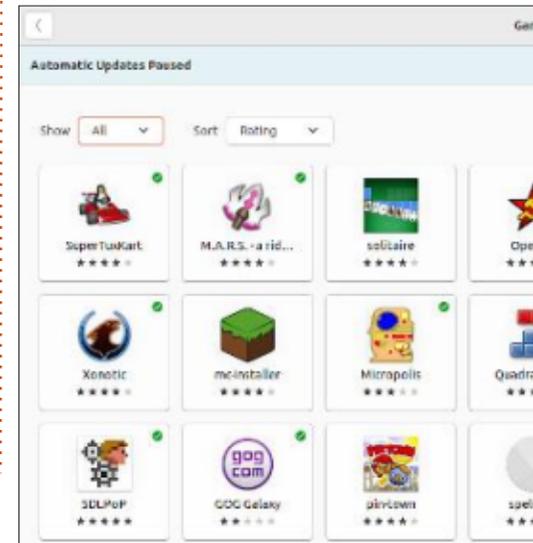
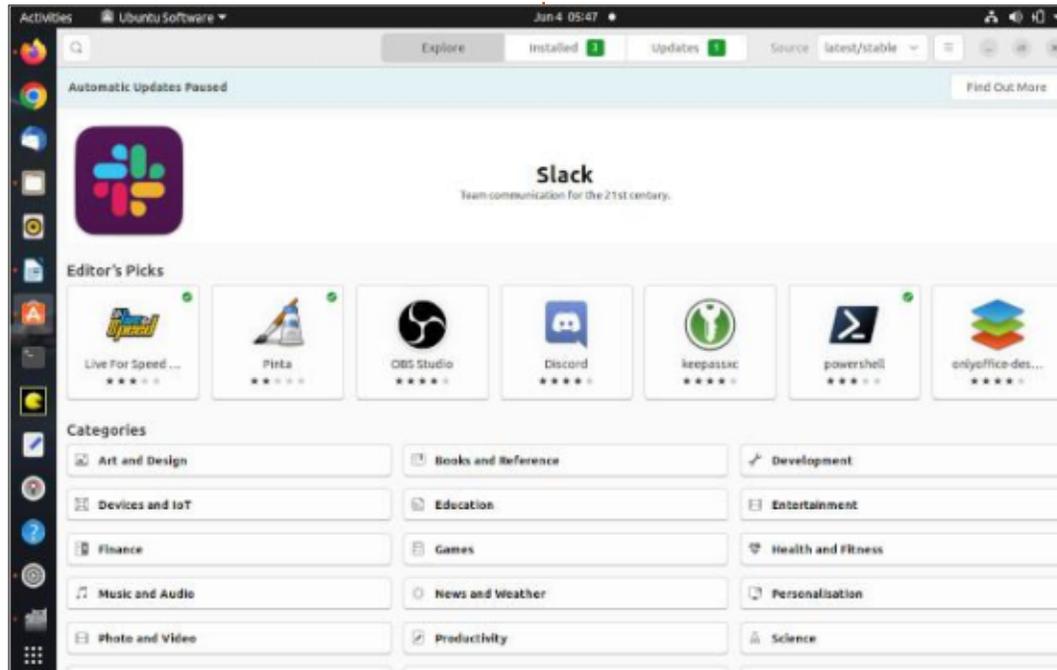
Just below that, you'll see the current Editor's Picks. These will also change on occasion, but do not exist on a 'scrolling ribbon' like the highlighted apps at the top.

Below that, you'll see standardized categories of different applications, including Games, Science Applications, Books and Reference, and several other

categories.

## THE GOOD

I personally find the overall design of the Software Center both aesthetically pleasing and satisfactorily utilitarian. You can usually pretty easily 'shop' through applications of the general category you're interested in at a given point. Once you click the desired category, you'll find a screen with a number of applications on it. Longtime readers (both of you!) will hardly be surprised that I'm going to pick Games to illustrate:

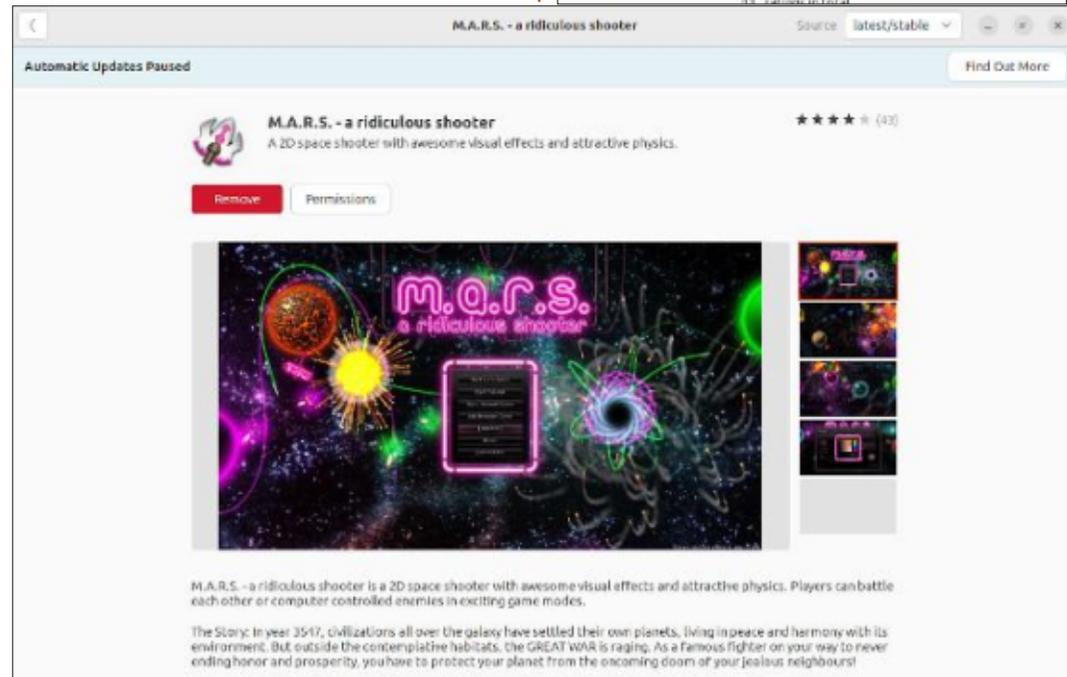


The green circles with check marks denote programs that have already been installed. Even if you install using the apt-get command-line (more on that later), the Software Center will usually pick that up and show it as being installed.

Once you click on an application, you'll get a very informative page with info on that application. At the top, you'll get a screenshot.

Obviously, you have the name at the very top, along with a brief description, an average user rating out of 5 possible stars, a button to install or remove, another button to

review required permissions once the application has been installed, and additional screenshots. Click them to see more of what the application looks like.



Below the screenshots is a more detailed description of the application. As you continue to scroll down, you'll see information on channel, version number, type of license, name of developer, source, download size, a button allowing you to write your own review, and more summarized review statistics.

And, as you continue scrolling downwards, you can see individual reviews:

## THE BAD

The Software Center is VERY slow, to the point that it often seems locked up when it's actually just SLOWLY churning away (although it frequently DOES lock up, too). As often as I can, I use the Software Center interface to 'shop', then use apt-get to do actual installations, as it's MUCH faster.

For those new to the concept, one of the things I've described often in these columns (and will continue to do so, as the concept definitely merits repetition), is use of the CLI, or Command-Line Interface, when it's an easier way to perform an operation. The

Command-Line is where you would go to type in commands, rather than using the default GUI, or Graphical User Interface, which is the interface you see when Ubuntu starts up.

Some things are easier to do in one, other things are easier to do in the other. Because of, I don't know, reasons, there is no facility built into Ubuntu by default to invoke a command-line. To get to a command-line for the first time, try using the shortcut key combination: CTRL - ALT - T. This means hold down the key marked CTRL, then also hold down the key marked ALT, then briefly tap T. This will open a terminal interface where commands can be typed.

One of the tasks that is typically easier to perform in the command-line is software installation, IF you know or can guess the name of the package. The package name is often completely obvious, the package to install the game NJAM is 'njam'. For Calligra Office Suite, it's 'calligra'. A little calculated guesswork will often get you where you need to go in this respect. To install BibleTime, for example, you would type in the following command:

```
sudo apt-get install  
bibletime
```

then hit the Enter key. The terminal will ask you for the administrator password you set up when initially installing Ubuntu, will usually advise you how much information it needs to download (you do, of course, need to be online to download and install software), and will also usually prompt you to confirm you want to commence the download. After it finishes the download, it will automatically begin and complete the installation.

Note: The 'sudo' before the apt-get install command represents 'super user do', telling Ubuntu that you want temporary superuser access, which is required to install software. Being familiar with the sudo concept is VERY helpful in Linux. There are many functions that will require superuser access to perform.

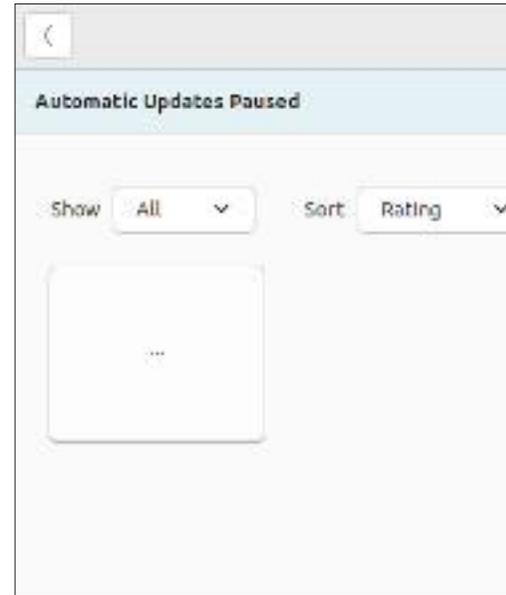
As a quick aside, I recommend that since you'll wind up using the command-line pretty frequently, putting Terminal (which is the command-line access tool) on your Control Strip is a good idea, so let's

do that now. Go to the application drawer (the 9 small white squares in your bottom left corner), click, then look at the bottom of the screen that opens. You'll see 'Frequent'. Click that. When you see the Terminal icon, simply drag it to the left onto wherever you want it to appear on the Control Strip, then drop it. It will then be there until, if and when you deliberately remove it. Other applications can, of course, be added to the Control Strip the same way.

## THE (B)UGLY

The Software Center seems to be EXTREMELY buggy and unreliable. I have had it lock up repeatedly, crash the system completely on multiple occasions, and maddeningly refuse to properly load many, many times. When you launch it and invoke a category, sometimes you'll see the screen showing that it's pending.

The small square below Show: All and Sort: Rating SHOULD eventually be replaced with a list of software in the chosen category. Sometimes you can wait and wait, and only get this:



I don't know if there's a way to make it show the list of applications, so far I've just repeatedly killed and restarted the Software Center or rebooted the entire system, and had it eventually work. But something this basic should absolutely NOT be so problematic. It's ridiculous.

And sometimes the initial screen will show up without Highlighted apps. The initial screen will FREQUENTLY show up with no list of application categories, therefore leaving no way to proceed at all.

Absolutely maddening. These things should absolutely have been fixed before this version of Ubuntu

went gold. And I've had these problems on multiple machines built by different manufacturers. No excuse for this.

Next month: Maybe time for another gaming column to cleanse the palate from the bad taste left by Software Center's frustrating bugginess? Be here and see.



**Richard 'Flash' Adams** lives in rural north Alabama and has been a computer support technician, a business analyst, a software salesman, a sales analyst, a QC team lead, and is now disabled/retired. He enjoys reading, NFL football, computer and video games, cooking, and playing with Baby, his cockatiel. Feedback and suggestions are welcome at [acer11kubuntu@gmail.com](mailto:acer11kubuntu@gmail.com).



In my Python article for this month, I said “Being from Texas, most of us here have a tendency to “change horses in midstream” as the saying goes, and this month, I’m afraid I’m going to have to do just that.”. That applies even to the ‘Micro This Micro That’ article for this month. I try very hard to be consistent, but when issues come up with readers and/or users, I try to share information that might help other readers, especially when the topic is relevant to the subject of the articles. Last month, I said that I would expand on the compass project. My friend in Norway, Halvard, contacted me yesterday with an issue that dealt with his NeoPixel ring that I tried to help him with, and I thought I’d share that with you.

He had found a new driver library for the Raspberry Pi Pico that was supposed to handle the NeoPixel devices a bit better than the “standard” statemachine version that we have used in the past. However, he was having a problem on his system, where, when he ran the example program,

he set the number of LEDs to 24, but only 18 ever lit. That seemed very strange to me, so I started looking into his issue.

He pointed me to the repository for the driver which is [https://github.com/shreyask21/neopixel\\_rp2040](https://github.com/shreyask21/neopixel_rp2040). As I usually do, I downloaded the repository as a zip file rather than clone the folder. Once I got it downloaded, I unpacked it and copied the relevant files to a working folder. I already had the RPi Pico set up with the NeoPixel ring and the battery pack from trying to work on the next installment of the article from last month, so I thought I was good. Using Thonny, I copied the driver library and the example to the Pico and jumped in.

The first thing I did was to change the Driver ‘In pin’ in the instantiation function call.

```
led =  
neopixel_rp2040.neopixel(LEDs=2, PIN=16)
```

To remind you, the PIN assignment is the GP16 pin which is

the physical pin 21 of the Pico.

In the example file the author uses

```
led =  
neopixel_rp2040.neopixel(LEDs=2, PIN=22)
```

I purposely kept the number of LEDs set to 2, just to verify that the program worked. Halvard’s issue was that if he set the number of LEDs to 24, only the first 18 worked. To get the entire 24 to light, he had to set the LEDs to 32.

Anyway, back to my story. When I tried to run the example, nothing happened. I was very confused. It turned out that my battery pack (which uses rechargeable batteries) had run low on power. After a brief 2 hours of replacing electrons into the batteries, I tried again.

The example program worked with just the two LEDs without an issue (except for the brightness) and I then moved on to a test using just 12 LEDs. Again it worked. I then took a deep breath and tried all 24. Again, it worked.

When I say that the brightness was an issue, I’m just saying that the darn things are TOO BRIGHT for my old eyes. It thought I was looking directly into a bright halogen bulb! So, I let Halvard know my progress and suggested that he check his battery pack.

It turns out that Halvard had purchased a newer version of the PixelRing that is RGBW, not just RGB. While you would think (on one side of your brain), that the RGB drivers would work with RGBW NeoPixel sets. They do, but not quite properly.

When trying to figure out why things were not quite right, I stumbled across this web site <https://forums.electrincip.com/t/neopixel-strips-rgb-vs-rgbw/4212/8>. It contains a long discussion that eventually explains everything. Peter, one of the posters, explained it in a very short but important comment.

“The RGBW ‘Neopixels’ are a different controller, SK6812, but it

## MICRO THIS MICRO THAT

looks like the actual protocol is very similar (except for having 32 bits per LED instead of 24). It sounds like it'd be worth starting from the WS2812 library and making some modifications."

So that explains why things went wonky when Halvard tried to use the driver for WS2812 NeoPixels when he actually had SK6812 NeoPixels. Thank you Peter for the explanation.

So off I went again on a search for a driver that would, at least, support the SK6812 and hopefully for the WS2812 as well. I found it at [https://github.com/blaz-r/pi\\_pico\\_neopixel](https://github.com/blaz-r/pi_pico_neopixel).

On his repository he states:

*"You create an object with the parameters number of LEDs, state machine ID, GPIO number and mode (RGB or RGBW) in that order. So, to create a strip of 10 leds on state machine 0 and GPIO 0 in RGBW mode you use:*

```
from neopixel import Neopixel
```

```
pixels = Neopixel(10, 0, 0, "RGBW")
```

*Mind that you can use whichever*

*order of RGB / RGBW you want (GRB, WRGB, GRB, RGWB ...). This only represents the order of data sent to led-strip, all functions still work with RGBW order. Exact order of leds should be on the package of your led-strip. (My BTF-lights sk6812 has GRBW)."*

So if you are using a RGBW strip or ring, you can simply use the initialization as shown above in the quote.

```
pixels = Neopixel(10, 0, 0, "RGBW")
```

If, however, you are using an older RBG strip or ring, you can simply replace the mode designation "RGBW" with "RGB".

```
pixels = Neopixel(10, 0, 0, "RGB")
```

The parameters are easy.

```
pixels = Neopixel(NumberOfPixels, StateMachine, Pin, Mode)
```

As always, Pin refers to the IO pin, not the physical pin.

The distribution comes with four example programs that show off the abilities of the driver and I have

to admit, they work well, both for me and for Halvard – who tested them as well and they ran fine for him when he modified the initialization call.

My favorite example is the firefly example program. It reminds me of summer evenings back when I was a child, chasing the fireflies in the back yard with a mason jar my mother let me use. Even today, when I see fireflies (which are actually in the beetle family and not flies at all), I am thrown back to those memories.

So, with the pause for this month's update, we'll press play on the compass program next month using the new driver for the NeoPixel display.

Until next time, as always; stay safe, healthy, positive and creative!



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



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# UBPORTS DEVICES

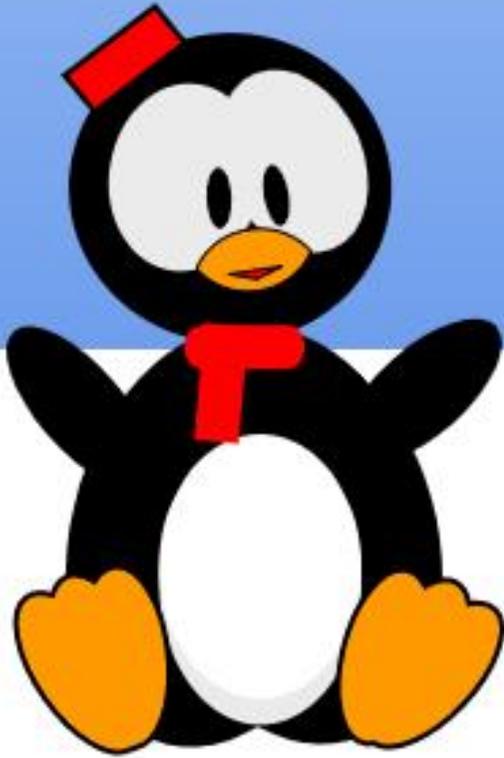
Written by UBports Team



# The daily waddle



FIRST RULE OF CODING CLUB:  
IF IT WORKS, DON'T CHANGE IT.





# MY STORY

Written by Hansrudolf Brunner

Looks like Calibre was never mentioned in any FCM before.

I own quite a lot of books and even more eBooks. To keep some overview, I use Calibre. I add lots of things to my Calibre-library:

- eBooks
- printed books (my library: covers and contents)
- manuals (installation, user, reference)
- patient instruction leaflets from pills and medicine (scanned)
- journals (whole magazines or single articles, from the internet or scanned)
- pictures (old maps, drawings)
- interviews
- tutorials (PC, Linux, guitar,

photography, ...)

- recipes
  - DVD (covers)
- ... and this in three different languages (German, English and Portuguese).

Sure, adding keywords or indexes is quite some work. But if I need the manual of some motherboard, or information on how to replace the power-supply of my microserver ... everything is literally right on my fingertips. Or finding all Full Circle Magazines containing something about GIMP ... no problem.

Calibre automatically adds a picture of each item. Sometimes

there is no picture available, or the pictures are of different sizes.

Therefore I replace the pictures by a standard-sized picture, from the file itself or by searching the internet. That way, I get a nice overview, instead of a quite chaotic one.

Recently I added the location/shelf of my real books. Now I no longer spend time searching for a book on my bookshelf.

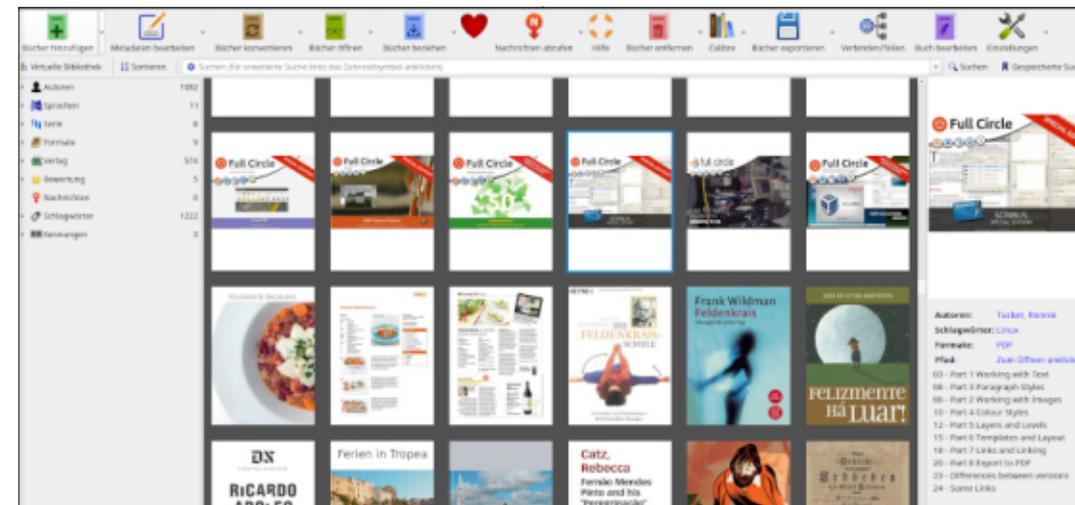
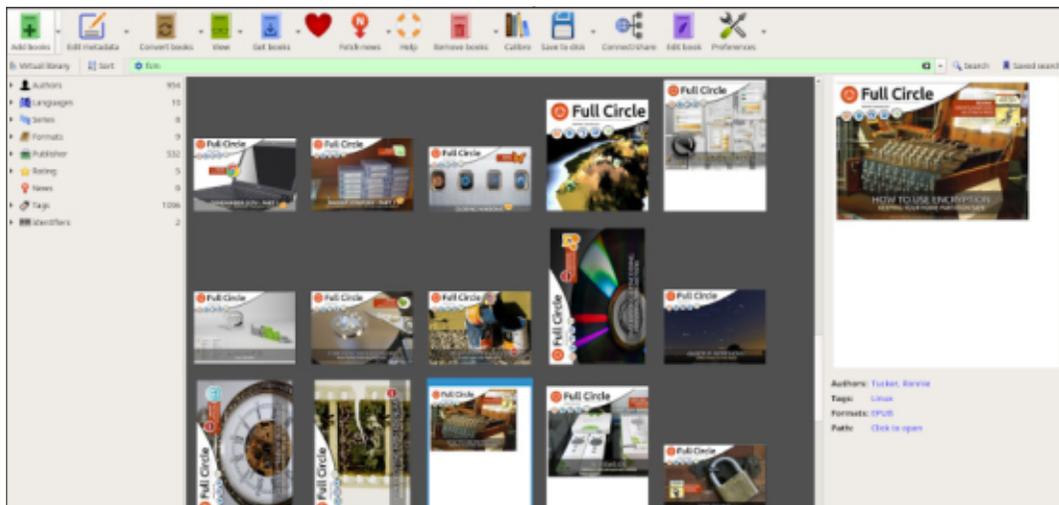
I like the search-facility: you may search for a word in titles and index, or for specific keywords, by autor, publisher, language.

And something important: I never had any software problems with Calibre.

One warning: DRM is not supported. For these eBooks I use a Windows laptop. Maybe I will create some «links» in Calibre sometime.



**Hansrudolf** started as a COBOL-Programmer, changed into support for IBM operating-systems and later for networking. He has used Linux since early SUSE. Must be some twenty years now? He changed from SUSE to Ubuntu, Mint, and now MX-Linux (XFCE).





# 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.**



# REVIEW

Written by Adam Hunt

# Kubuntu 22.04 LTS

The new Kubuntu long term support release, 22.04 LTS, arrived on 21 April, 2022, and brought almost no surprises for Kubuntu fans.

Kubuntu 22.04 LTS completes this development cycle of three “standard” releases which started with Kubuntu 21.04 in April, 2021.

This release is the 35th version of Kubuntu and the 14th one with the Plasma 5 desktop. This is what I would call a very mature project, and has attracted a solid base of dedicated users.

As an LTS, Kubuntu 22.04 LTS has three years of support, until April, 2025.

## INSTALLATION

I downloaded the Kubuntu ISO file and carried out an SHA256 sum check on it from the command-line to ensure that the file was good.

It is worth noting that this release is 3.4 GB, which is 300 MB bigger than the last release,

Kubuntu 21.10, and matches Ubuntu 22.04 LTS for download size.

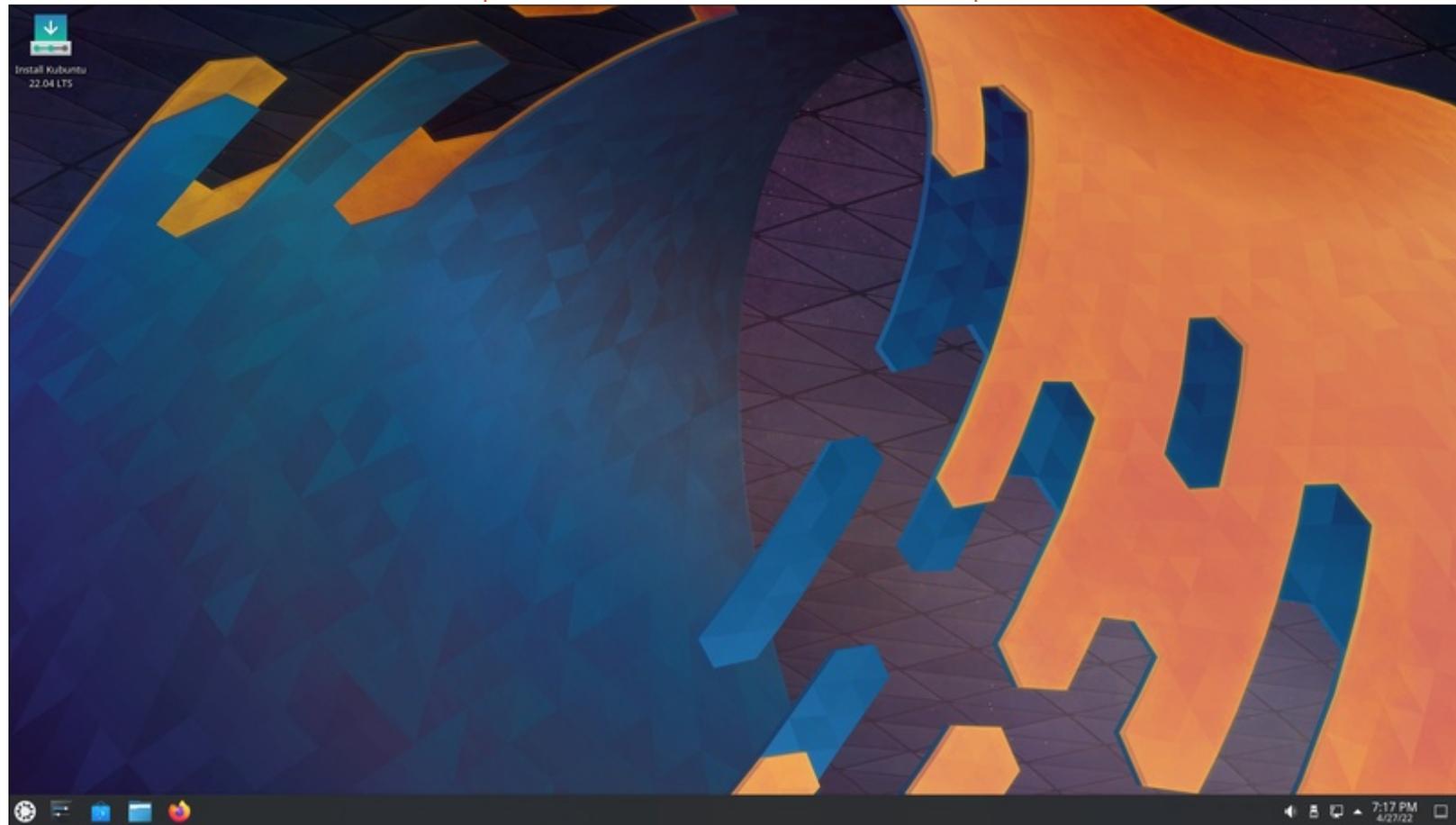
I used a USB stick equipped with Ventoy 1.0.73 to boot up Kubuntu 22.04 LTS and test it. Ventoy makes testing Linux and BSD distributions easy as – once it is installed on a

USB stick, you can just cut and paste the ISO files onto the stick and Ventoy takes care of the rest at boot-up. It also allows multiple ISO files on one stick, chosen at the boot window, which is great for trying out a bunch of different distributions in sequence.

## SYSTEM REQUIREMENTS

The minimum system requirements for Kubuntu are the same as for Ubuntu and are currently:

- 2 GHz dual-core processor
- 4 GB RAM
- 25 GB of hard-drive, USB stick,



## REVIEW

memory card or external drive space

Screen capable of 1024x768 pixel screen resolution

Either a CD/DVD drive or a USB port for the installation media

Internet access is useful, but not essential

## NEW

This whole release cycle for Kubuntu has introduced only a few small changes, and the LTS release has almost nothing new over the last standard release, which is the way the development process is supposed to work. Any changes should happen early in the cycle, within the first release or two, and

then the last standard release should fix any outstanding issues so that the LTS is rock solid, with almost nothing new included.

This release uses Qt 5.15.3 and the KDE Plasma 5.24.4 desktop which introduces some small refinements. The standard KDE menu now works very smoothly and is easy to use.

Even though Ubuntu has been using the Wayland protocol display server by default since Ubuntu 21.04, Kubuntu is continuing with the X server for this release. A Wayland session is available on boot-up for testing, but the Kubuntu developers warn that it is officially not supported, so you

have been warned!

The list of default applications remains the same as Kubuntu 21.10, although most versions have been updated to the KDE Gear 21.12.3 releases.

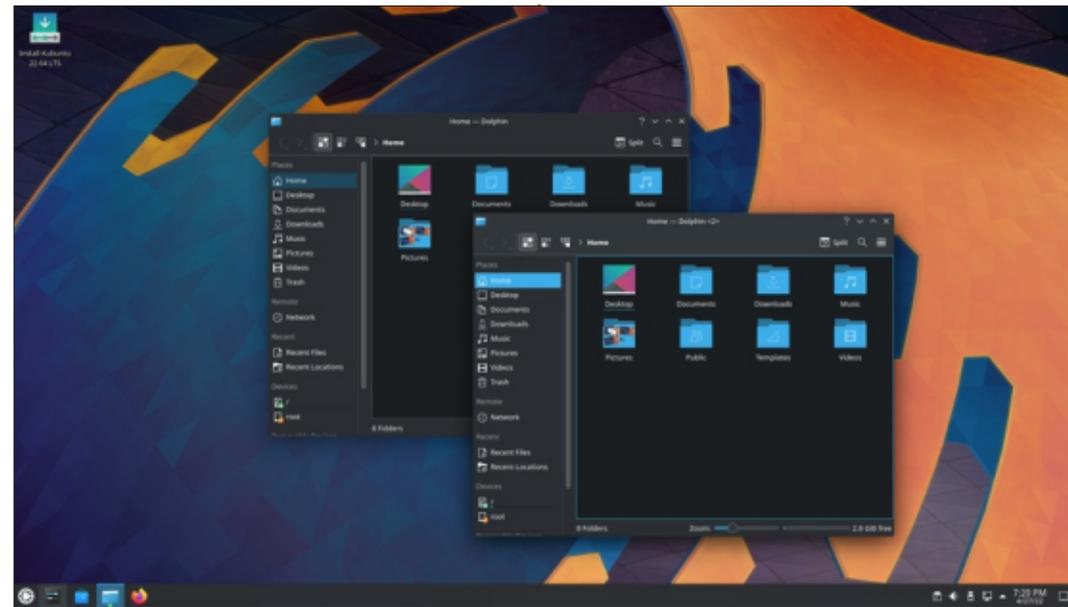
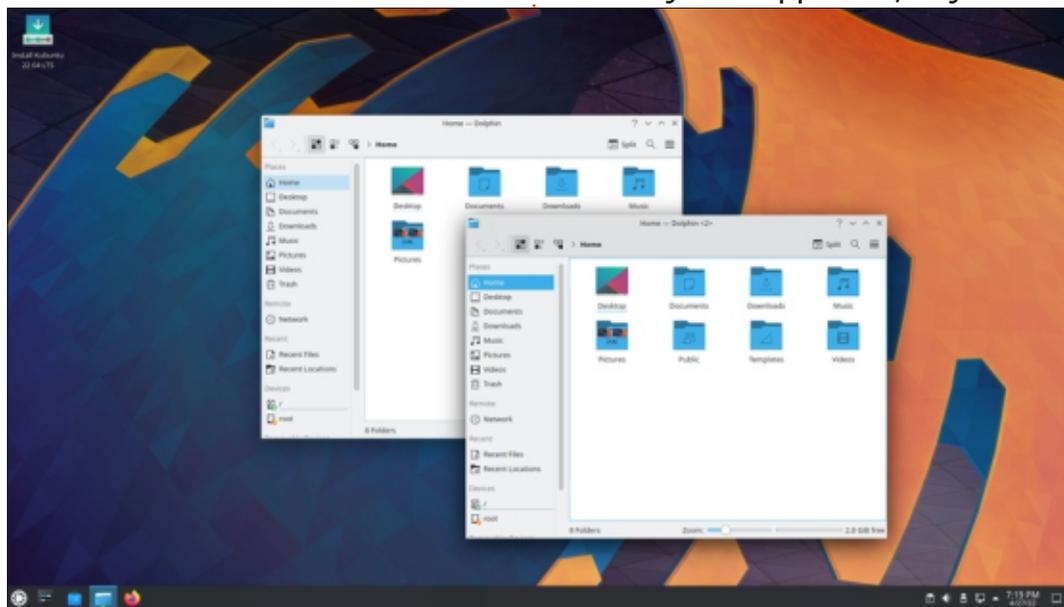
## SETTINGS

As in the past, Kubuntu 22.04 LTS has a myriad of settings allowing users to make Kubuntu look and work almost any way they want.

Kubuntu 22.04 LTS offers four global themes, four application styles, six Plasma styles, five colors, two window decoration styles,

eight icon sets, and eight cursor styles, and that is just the list of the installed options. Most of the settings pages also offer one-button download and installation of many, many more options, right from the settings windows.

Kubuntu 22.04 LTS also offers 68 pre-installed desktop widgets, one more than in 21.10, as these only seem to proliferate over time. Widgets are small applications that can be added to the desktop to improve functionality and these range from analog clocks and weather applications to CPU and RAM load monitors. Hundreds more widgets can also be downloaded, but you will need a large screen for them all.



## APPLICATIONS

Kubuntu releases come with a fairly complete suite of user applications. In Kubuntu 22.04 LTS these include:

- Ark 21.12.3 archive manager
- Discover 2.1.2 software store\*
- Dolphin 21.12.3 file manager
- Elisa 21.12.3 music player
- Firefox 99.0.1 web browser\*\*
- Gwenview 21.12.3 image viewer
- Kate 21.12.3 text editor
- Kcalc 21.12.3 calculator
- KDE Partition Manager 21.12.3 partition editor
- Konsole 21.12.3 terminal emulator
- Kmahjongg 21.12.3 game
- Kmines 21.12.3 game

- Konversation 21.12.3 IRC client
- Kpatience 21.12.3 game
- Ksudoku 21.12.3 game
- Ktorrent 21.12.3 BitTorrent client
- LibreOffice 7.3.1 office suite, less only LibreOffice Base database
- Muon 5.8.0 package manager\*
- Okular 21.12.3 PDF viewer
- Plasma System Monitor 5.24.4 system monitor
- PulseAudio 15.99.1 audio controller
- Skanlite 21.12.3 scanning utility
- Spectacle 21.12.3 screenshot tool
- Startup Disk Creator 0.3.13 (usb-creator-kde) USB ISO writer
- Thunderbird 91.8.0 email client
- VLC 3.0.16 media player\*

\* indicates same application version as used in Kubuntu 21.10

\*\* supplied as a snap so version

depends on the upstream package manager

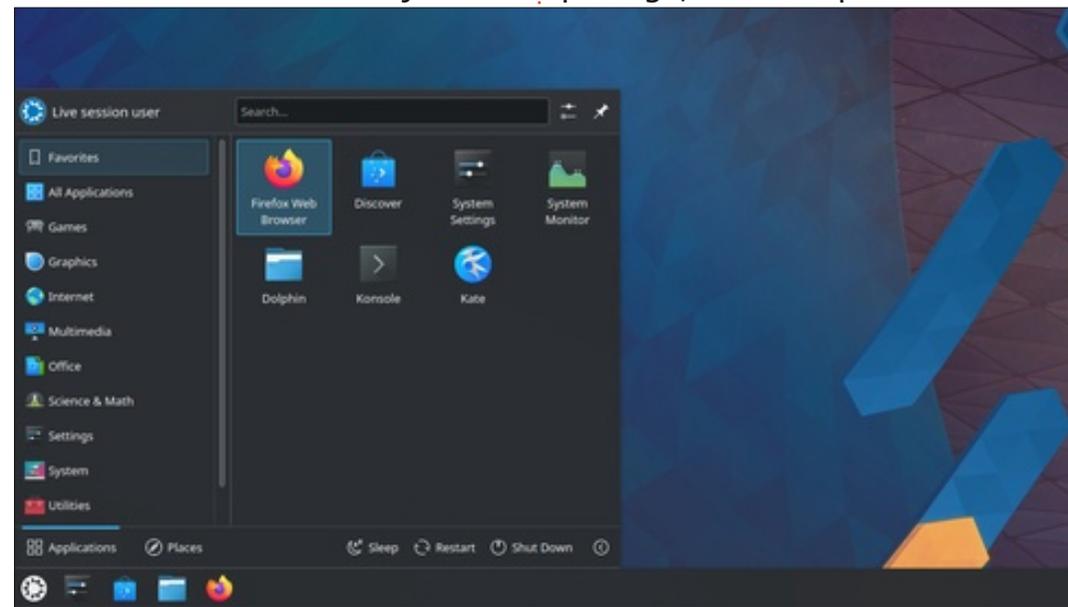
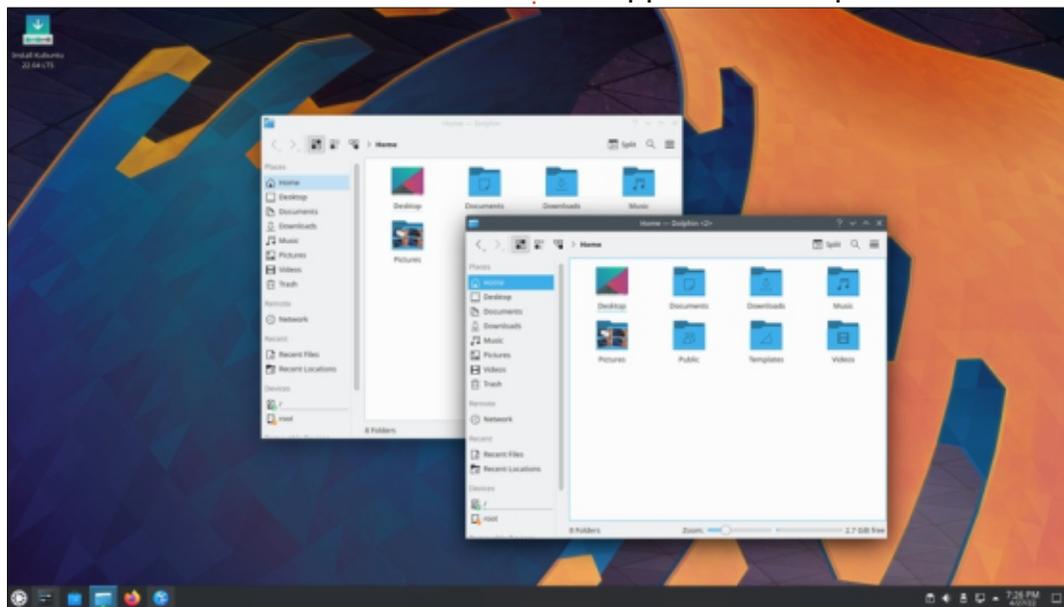
As can be seen from the lack of asterisks, most of the applications included are updated versions from the KDE Gear 21.12.3 collection. In general, these updated applications include small tweaks and improvements.

The only obvious desktop applications lacking in the default collection are a webcam and an image or video editor, although the repositories have a number of options should they be needed. A CD/DVD burner application was dropped from Kubuntu long ago, as new computers no longer ship with that hardware. The formerly-

included K3B CD/DVD burner is available to install though, should you have an older computer with an optical drive.

Kubuntu has the LibreOffice office suite, complete except for the infrequently-used LibreOffice Base database application. Again, it can be installed if needed.

Of course one of the key questions to be answered with the release of Kubuntu 22.04 LTS is whether Firefox would be included as a snap package or not. Ubuntu switched to using the snap version of the Firefox web browser in Ubuntu 21.10. That release also offered the traditional .deb package, but that option is now



# REVIEW

gone from the 22.04 LTS repositories, leaving only the snap version. The Kubuntu developer team had the option of moving to the snap, switching browsers or doing something else. In the end they decided to go with the snap package.

Some Ubuntu flavors that have moved to the snap version of Firefox provided detailed rationales for it, like the Xubuntu developers

did in their release notes, but the Kubuntu release notes simply state: “Firefox 99 is the default browser, using a snap from the Ubuntu archive.” No debate.

## Conclusions

Kubuntu 22.04 LTS is a pretty-close-to-flawless release, with virtually no changes from Kubuntu 21.10. This is a good thing, as it means that there are no last minute

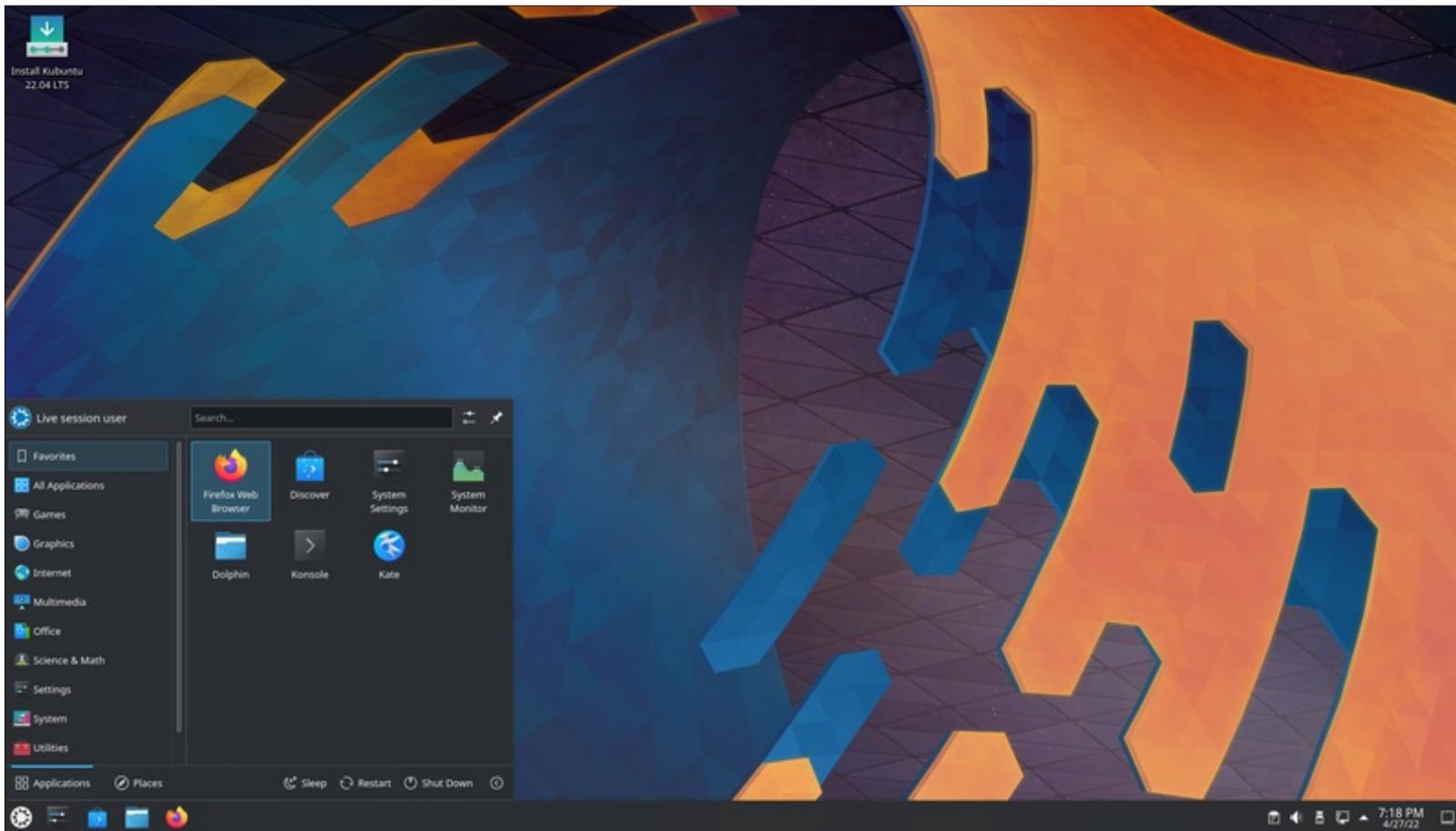
additions or surprises – everything is well-tested and just works.

I think Kubuntu’s dedicated fans will enjoy using this release for the next few years.

## EXTERNAL LINKS

Official website:

<https://kubuntu.org/>



**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

# Fedora 35

As part of our ongoing look at Linux distributions that come from outside the Ubuntu and Debian empire, we are going to head over to the “other side of the tracks” so to speak.

In the Linux world, the genealogy chart is dominated by two major distribution families. The Debian family is familiar to Ubuntu users, as Ubuntu and its derivatives are based on Debian. The other big Linux family is Red Hat and these days it all spawns from Fedora so we are going to take the latest version, Fedora 35, for a drive.

## BACKGROUND

Fedora actually has its roots in Red Hat Enterprise Linux (RHEL), as it started out as the freely-distributed version of RHEL. RHEL is the wildly commercially successful Linux distribution that powers organizations from the US Federal Aviation Administration and the US Army to Canada’s air traffic control non-profit, Nav Canada. These days the tables have been turned and RHEL is actually

based on Fedora as the “up stream” distribution. Fedora is used as a “leading edge” distribution to test out new ideas and technology before it gets incorporated into later RHEL stable releases for business use.

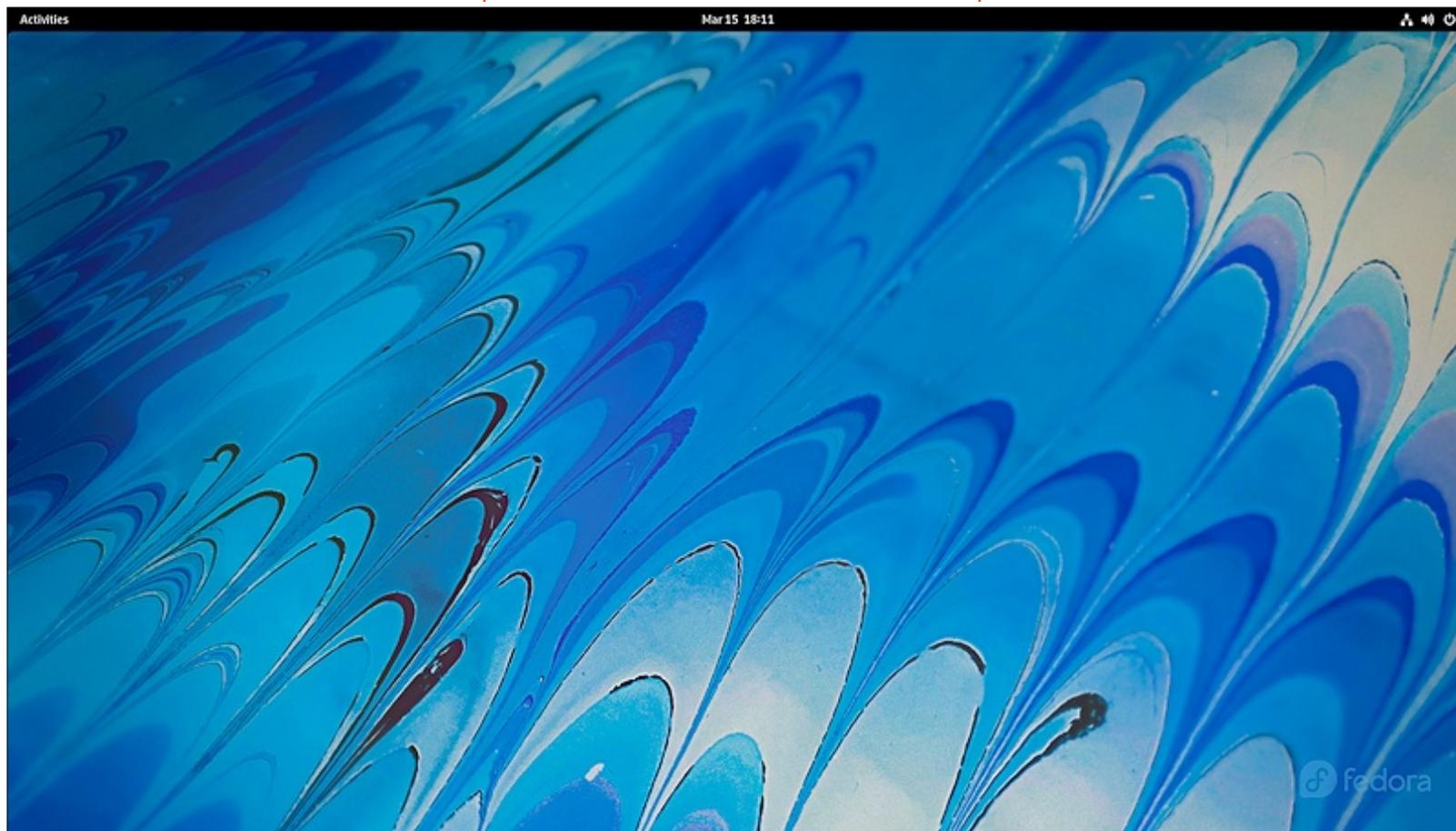
Fedora is developed by the

Fedora Project, a collection of paid and volunteer developers, which is sponsored by Red Hat, Inc., the company behind RHEL. The company was founded in 1993 and has been owned by IBM since 2019.

A new version of Fedora is released every six months, just like

Ubuntu. The first release of Fedora was on 6 November, 2003, so, 19 years later, it is a very mature and polished distribution. The current version is Fedora 35, which was released on 2 November, 2021.

Since the release of Fedora 30 there have been five different



# REVIEW

Fedora editions:

- Workstation for desktops
- Server for servers
- CoreOS for cloud computing
- Silverblue for container-based workflows
- IoT for Internet of Things devices

Fedora users tend to be pretty dedicated and their numbers include Linus Torvalds, the creator

of the Linux kernel, which is quite an endorsement.

One of the biggest differences between the family of Red Hat-based distributions and Debian-based distributions is the package management system employed. While Debian relies on .deb files and APT, Red Hat uses .rpm files with DNF. Fedora can also use Flatpak and Snap applications, making these packages compatible

across the Debian and Red Hat worlds and indeed most of the Linux universe.

## GETTING FEDORA

Fedora has a nice website, cleanly laid out and inviting. The first-offered download is an http download of the flagship product, Fedora 35 Workstation with the Gnome desktop. It is 1.9 GB to download as an ISO file. The

website does offer links for many more choices, though, including bit torrents and versions with the KDE Plasma, Xfce, LXQt, LXDE, MATE, Cinnamon and i3 desktops. Since this was to be a general first look at Fedora, I went with the default Gnome desktop which uses the Gnome Shell.

Since neither my usual USB writer, UNetbootin, nor the command-line program "dd" would successfully write Fedora 35 to a USB drive for testing, I used Ventoy 1.0.71 and it worked flawlessly, allowing me to quickly boot up the Gnome desktop.

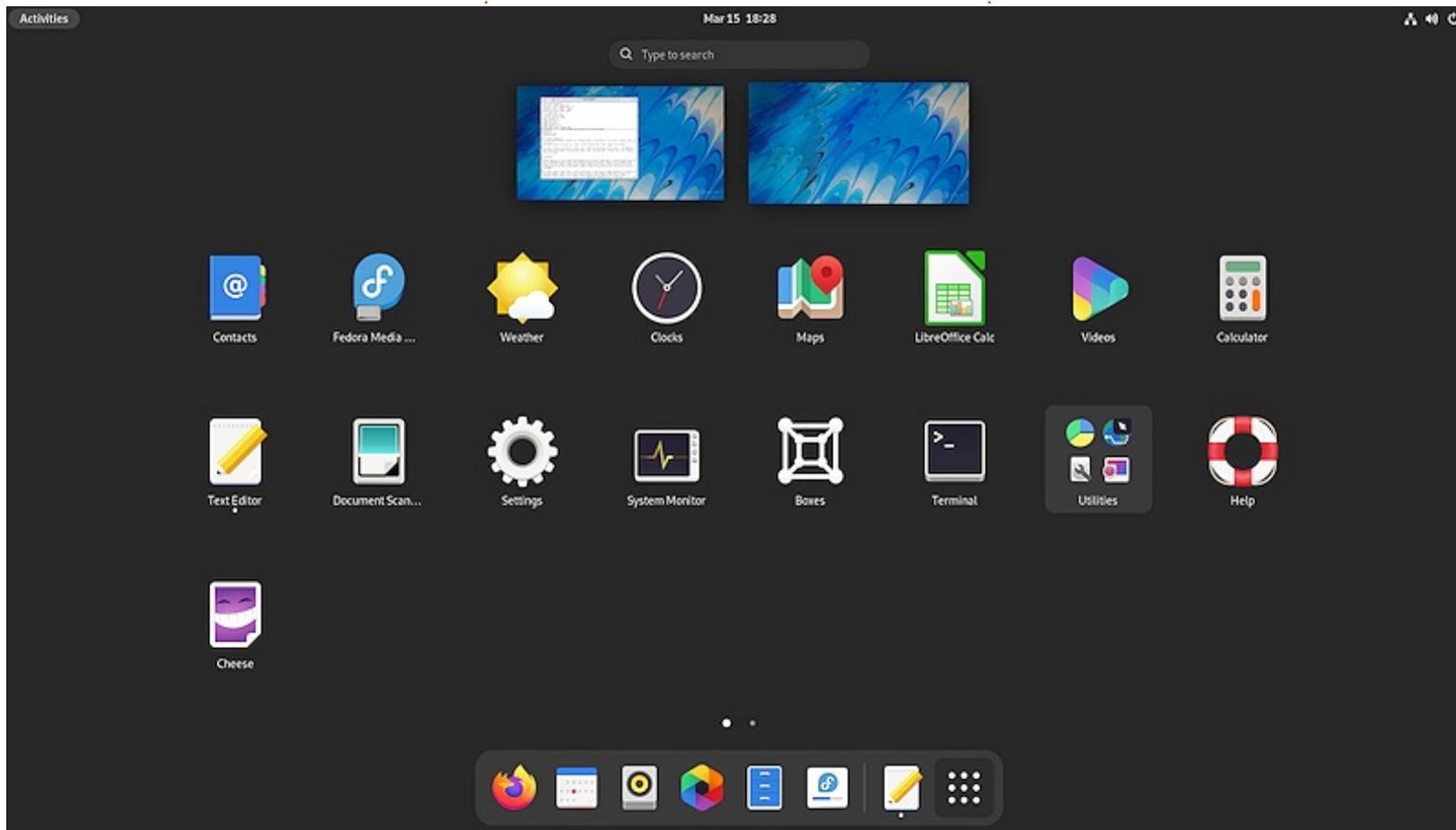
## SYSTEM REQUIREMENTS

Fedora comes in only 64-bit versions these days, 32-bit support having ended some time ago.

The release notes specify the recommended hardware for running Fedora 35 as:

- 2 GHz quad-core processor
- 4 GB of RAM
- 20 GB unallocated drive space

- and the minimum hardware as:
- 2 GHz two-core processor
  - 2 GB of RAM



# REVIEW

- 15 GB unallocated drive space

So this is not the distribution to run on old Windows XP hardware with a single-core processor and 512 MB of RAM – try **Slitaz** or **Puppy Linux** instead!

I tested Fedora 35 out on a nine year-old desktop computer with a dual-core 3.3 GHz processor with 6 GB of RAM, and Fedora ran very smoothly from the USB drive.

## TRYING OUT FEDORA

On boot up, Fedora 35 presents a very clean and simple Gnome desktop. In fact, it is a completely “vanilla” version of Gnome with virtually no changes. This differs from Ubuntu, which also uses Gnome, but has a very modified interface that looks and works very much like the old Unity interface.

If you like the current default Gnome experience, you will love Fedora and, if not, then not so much.

This implementation of Gnome on Fedora has some good points. It certainly is very simple and elegant. The desktop shows the wallpaper

and a plain top panel with the Activities menu, date and time, sound and network icons, the on/off button and nothing else. It is very clean and very minimalist, with no distractions.

The Activities menu can be clicked to open, or it can be opened using the “super key” (Windows key). The main menu shows two selectable desktops and the installed applications, with the most used ones on a bottom launcher and the rest on a grid menu. There is also a search function to save looking through the menus for an application.

There is a choice of 19 very tasteful wallpapers, but, otherwise, there is not much in the way of user

customization available, at least in the default installation.

That is the good part.

The bad part is that, in the vanilla Gnome 3 desktop, applications have no maximize or minimize buttons, just a close button. There is no “minimize all windows” feature either, so things get cluttered fast with a few applications open. You can “hide” applications or maximize them from the right-click menu, but that is about it. For anyone coming from a distribution that has this basic desktop functionality, Gnome Shell feels quite oversimplified. I am sure you can get used to it in time, or find add-on tools to add these features, but, out of the box, it

feels basically crippled.

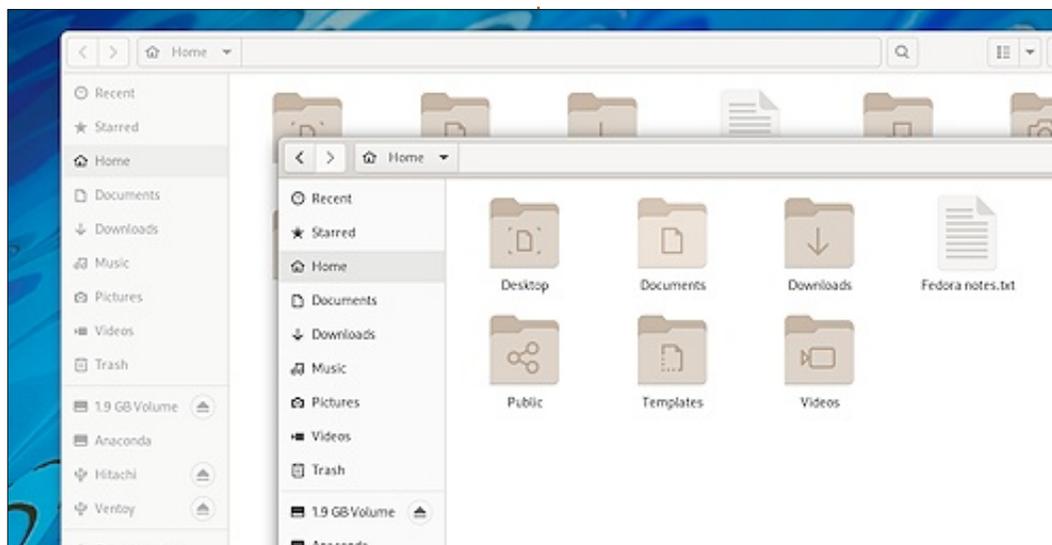
Of course, if you want a different desktop experience, you can install any of the Fedora versions with alternative desktops like KDE Plasma, Xfce, or LXQt, for instance.

## APPLICATIONS

For a large 1.9 GB download, Fedora actually comes with a rather short default list of applications. That is not necessarily a bad thing, though, as it makes it easier to add any desired applications rather than have to remove ones that are not needed or that are cluttering up the main menu.

The included applications include:

- Boxes virtual machine
- Cheese 41.0 webcam application
- Document Scanner (Simple Scan) 40.5
- Document Viewer (Evince) 41 alpha PDF viewer
- Fedora Media Writer USB creator
- Files (Nautilus) 41.0 file browser
- Firefox 93.0 web browser
- Gedit 41.alpha text editor
- Gnome Calendar 41.0
- Gnome Disks 41.0 disk monitor



# REVIEW

- Gnome Software 41.0 software store
- Gnome Terminal 3.42.0 terminal emulator
- Image Viewer (Eye of Gnome) 41.0
- LibreOffice 7.2.1.2 office suite
- Photos 40.0 image organizer
- Rhythmbox 3.4.4 music player
- Videos (Totem) video player

LibreOffice comes complete with all components except the database application, LibreOffice

Base. This is the least used part of LibreOffice and can easily be added if needed. LibreOffice Draw and Math are included, but for some reason do not show up on the Gnome main menu. They can be launched from within LibreOffice, though.

The default web browser is Firefox which really is an excellent browser these days and far better than the Gnome browser, Web

(Epiphany).

The provided file manager, Files (Nautilus), has a lot of deficiencies stemming from a simplification drive a few years ago that went too far. The good news is that the software repositories have some good alternatives like the Nautilus fork, Nemo, that can be installed from Gnome Software or from the command line.

# CONCLUSIONS

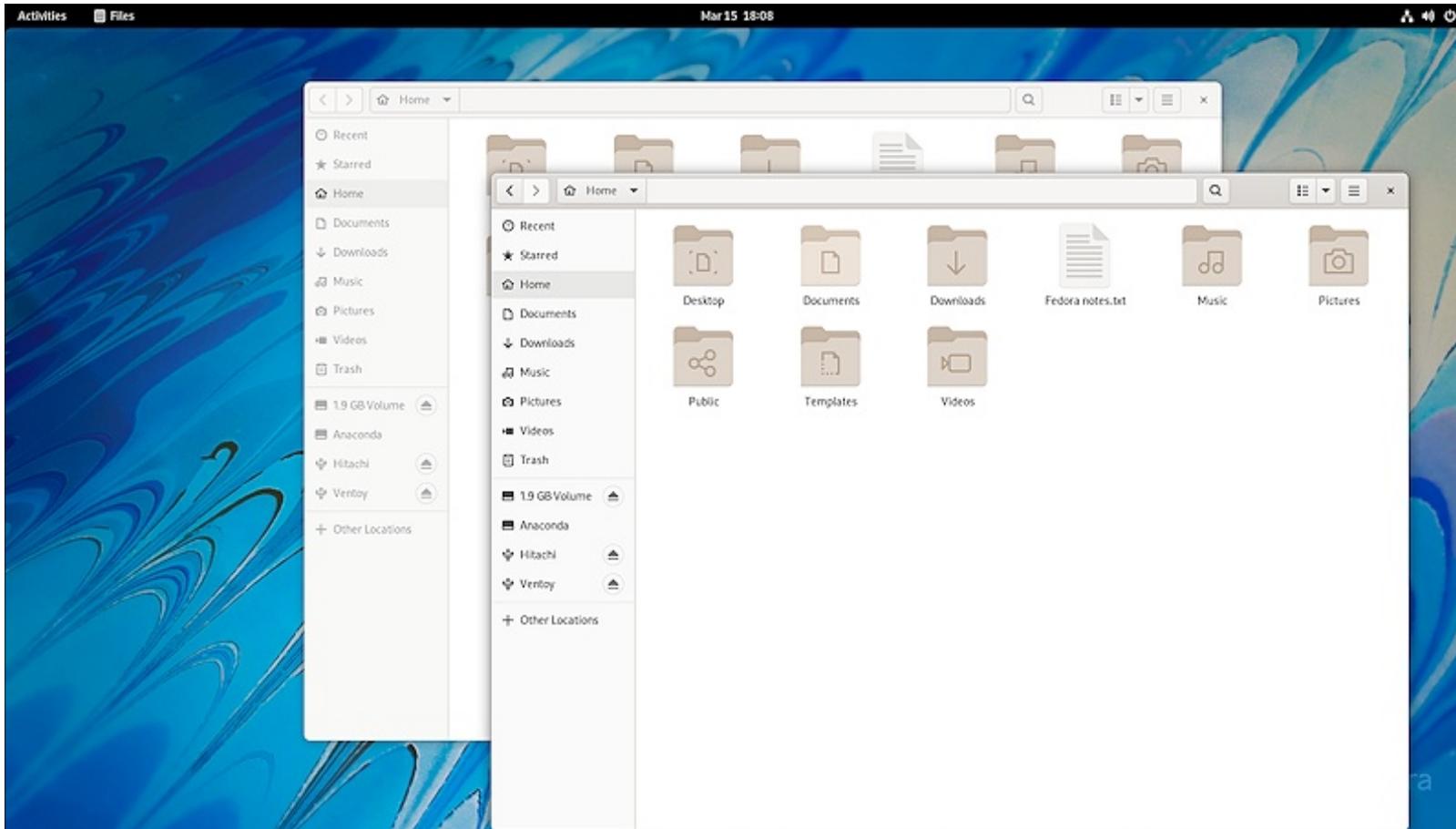
Fedora 35 with the Gnome desktop is a simple and elegant operating system. If you like the default Gnome desktop, then you will love Fedora 35, as it is pure Gnome. As long as you have some reasonably modern hardware to run it on, it provides a minimalist, but polished experience. If Gnome is not to your liking and you want an operating system with “maximize” and “minimize” window controls and other functionality, then one of the other desktops Fedora offers may be a better fit like KDE Plasma, Xfce, or LXQt. Either way, Fedora offers an operating system that is hard not to like.

# EXTERNAL LINKS

Fedora official website:  
<https://getfedora.org/>



**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 Siddharth Sundaresan

At around this time – it seems like ages ago – the first of the countries had issued emergency lockdown orders, and our lives were turned around beyond our wildest dreams as we all collectively fought to make sense of the unseen horror unfolding before us. What happened was beyond imagination (and this is a world that has survived a tsunami, way too many forest fires to count, loads of earthquakes, hurricanes, and so much more).

The more positive of us spun this exile, imposed from society, as

a means of enjoying some much needed R & R from the business of corporate life, and we all (re-)invested in a hobby or three while we dealt with it all.

So now, almost 2 years after the fact - when it seems the world is going pear-shaped again - I'd like to tell you all about my hobby: reading, and more specifically the many, many apps that allow me to do that on my Linux box.

Now, I say Linux box because I remember, back during my Windows days, that ebook readers

were limited to open source cross platform apps - including calibre, FBReader, CoolReader3 - the official offerings from Kindle, Kobo, and the like - which came with the walled gardens of each company (unless you knew how to work around them - more details another time), and the very Windows 8-ey Ice Cream Reader.

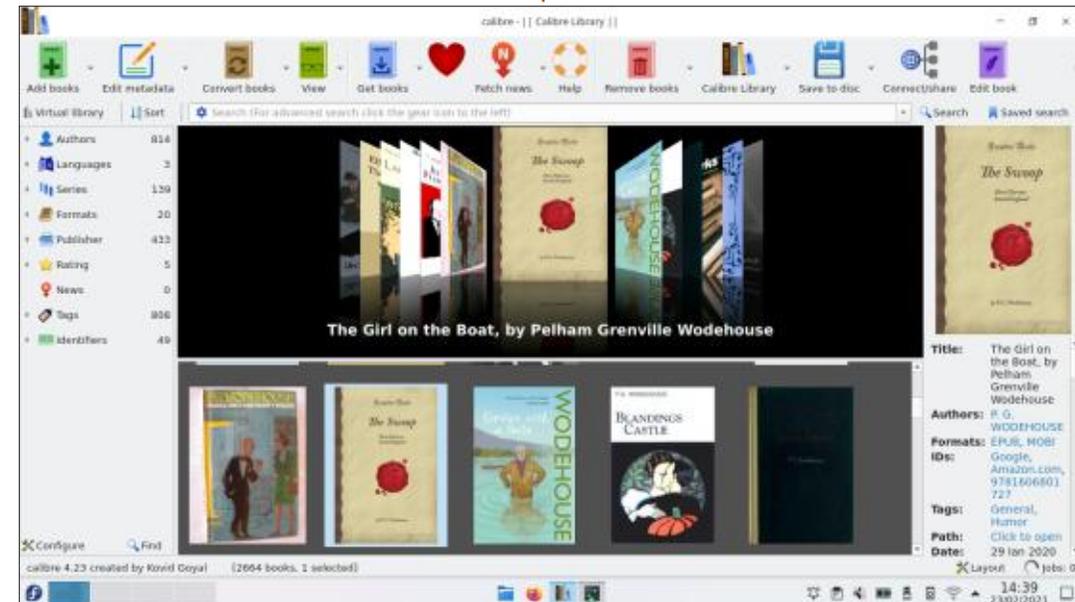
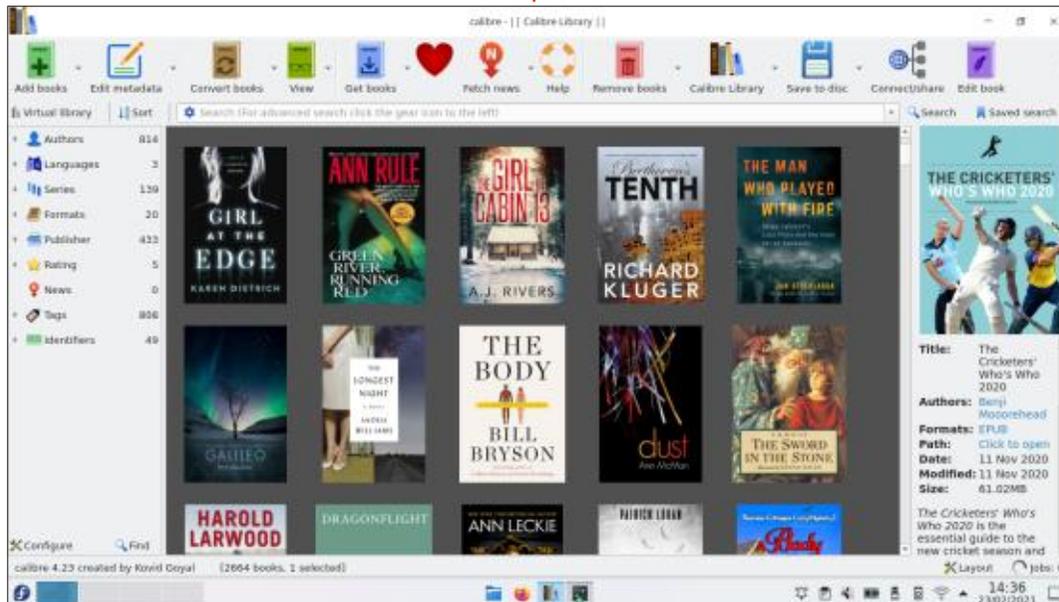
On Linux however, much like the distributions and maybe even the kernel itself, the user is presented with a number of high quality, well maintained, options that can be easily obtained with a single

# Ebook Readers

terminal command or a GUI search. Without any more faffle, let's look at the first of those offerings:

## CALIBRE

...is the granddaddy of ebook readers, but it does not stop there by any means. It can also organize your ebook collection, convert and share it across e-readers, and fetch news from major sites. The new versions also come with an ebook editor – about as featured as Sigil, the best one out there.



# REVIEW

The latest version of the software also comes with a revamped ebook reader, which has all the features from earlier versions, but lacks a little of the polish. I understand this was because of an issue with the Qt5 backend that calibre was using, which subsequently forced the devs to use a chromium instance. I'd not worry about the polish, as the devs are remarkably friendly, and the app is rigorously being worked on.

## How can you get it?

Installation: calibre is available in the repos of most Linux distros out there, with the exception of Ubuntu, and by extension, Mint and

KDE Neon. LMDE's repos don't have it, which is inexplicable, as Debian proper do. The affected users can still get the app from their website (the binary is recommended by the authors, especially if the distro repos have an old version), or FlatHub. The snap store, snapcraft.io, does not list calibre.

## Should you get it?

Yes, if you need a feature-packed virtual library of sorts, that can also facilitate reading a good book and some news now and then. Another resounding yes if you have eReader hardware and would like to sync it to your Linux machine.

This user rates it 5 of a possible

5 stars for functionality, and 4 of 5 for polish and UI design.

But it's understandable that a user might not need all the tools that calibre might offer them, which leads me directly to:

## FOLIATE

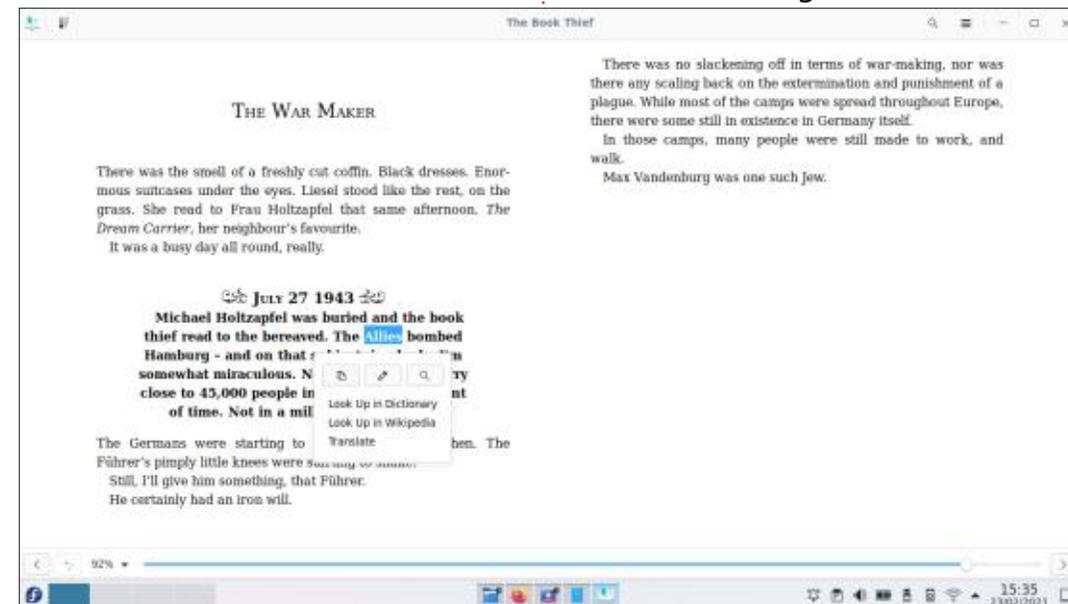
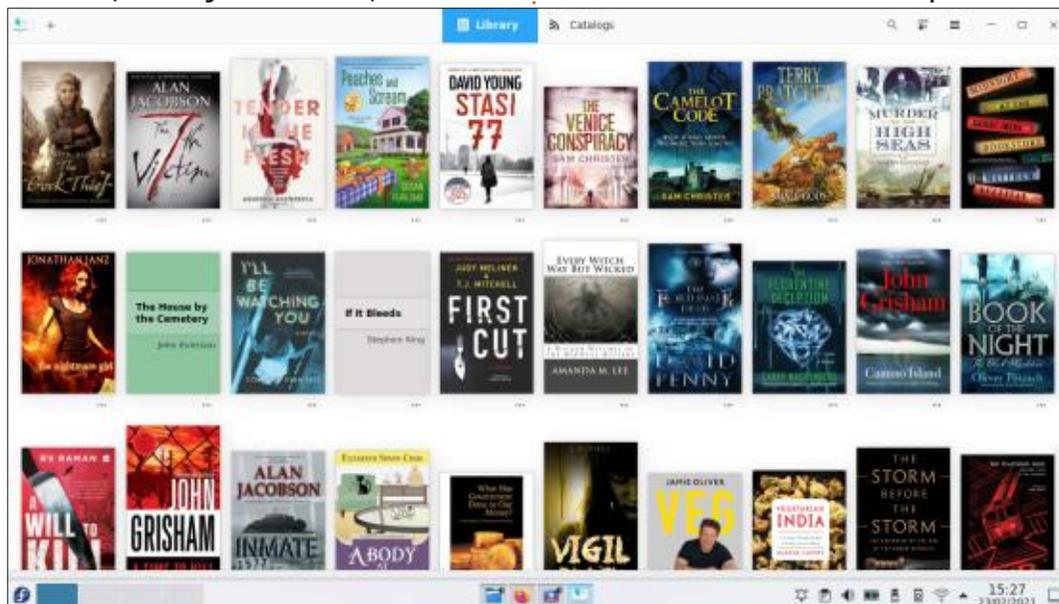
...the epub reader I would suggest without a second thought to someone who needs a pretty, but functional application that reads ebooks but can't do too much else. Foliate isn't as "old" as calibre by any means, but in the short time that the developers have been active, they've managed to get

quite a bit done.

The CSD based UX is modern, and intuitive, with a library view that greets the user once the app is started.

When the user opens a book, the UX gives way to a minimalistic interface that lets the book take centre stage, as it should.

The app reader has a bunch of useful features that should aid the reader, including a dictionary and translation tool, bookmark functionality, text to speech (needs a T-2-S engine), and reading time estimates. It also has the ability to fetch books online via OPDS feeds, under the catalog menu featured in



the previous image.

## How can you get it?

Installation: Foliate is available from the repos of Ubuntu, Fedora, Debian, Arch, openSUSE, Void, and all derivatives. The Flathub and Snapcraft stores also have it.

## Should you get it?

Yes, if you need a pretty ebook reader, with access to a library view and a progress bar.

This user recommends that power users use the calibre ebook organiser to catalogue their collections, with Foliate set to open individual ebooks.

Rated 4 of a possible 5 stars for functionality, and 5 of 5 for polish and UI design.

From the world of book readers with CSD based UX-es also comes...

## BOOKWORM

Bookworm (not to be confused with the similarly named software for Windows) is another no-frills, work out-of-the-box epub reader, that is about as feature-full and user friendly as Foliate. It has a library homepage, support for the dark theme, and a dictionary tool. Like most of the other readers on this list, it also supports annotation

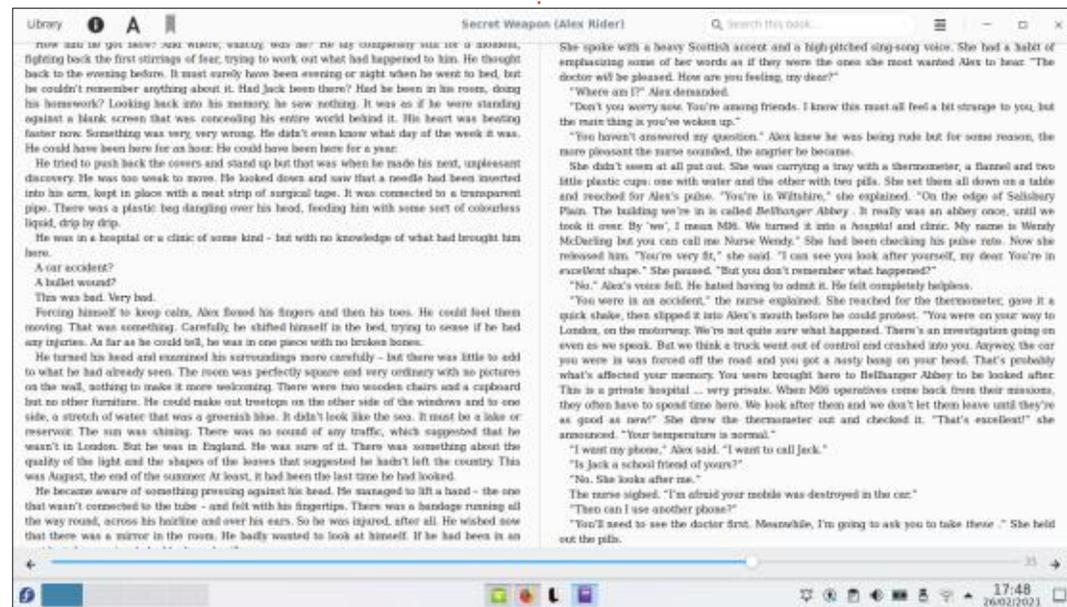
marks. Unlike the others though, the increasingly popular azw3 format is not supported out-of-the-box (many, many tools exist however, to convert to a more universal format like epub or mobi, which this app handles with aplomb)

It did suffer from a weird pagination issue, however, during my testing, when two-page reading is enabled in the settings (not turned on by default), the visible part is cropped, and the reader has to scroll down, in addition to navigating horizontally, like a user normally would. The down button (like the right button) moves the page horizontally, so I had to use my touchpad to scroll down, which,

for a long-term bibliophile, was very, very disconcerting.

Similarly unpalatable was another setting: the dark theme, which is also not enabled ootb, with good reason. The stock theme offered by the developers is full of a weird, almost navy blue, which I cannot imagine would be easy on the eyes over long periods. It can be very easily modified in the settings, which is one of the first things I did when I used the app.

With some settings changed, this app became really, really intuitive to read on, and I found myself reading a couple short stories from the book I had opened to snap pictures of xD.



The pagination however was a bit of a deal breaker, and I found myself often missing parts of the story and going back to scroll down to catch up.

## How can you get it?

Bookworm is available from the repos of most of the major distributions, notable exclusions being Ubuntu (there is a PPA), MX, antiX and openMandriva, after Fedora added it with version 31. As usual, this app is listed in the Flathub repo as well.

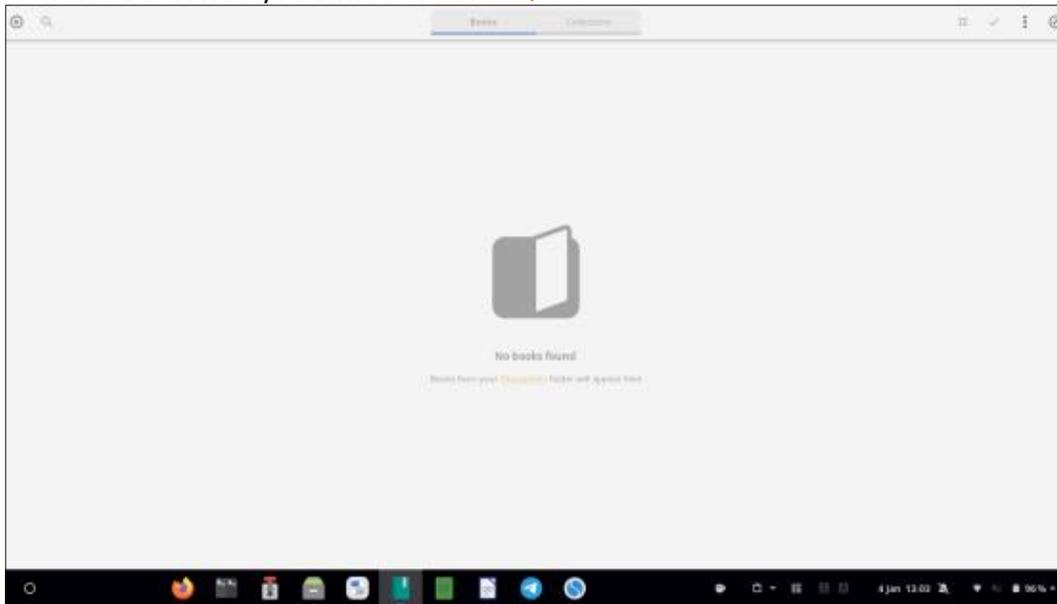
## Should you?

I will be honest, I admit a lot of

hard work has gone into designing the app, and it's a contemplative yes from me, if I had to suggest it to people.

I would rate the app 4.5 on 5 for the interface - a visit to their home page reveals that the app was originally built for elementary OS, but like a lot of apps in the appcentre, the very generous devs have made the app work on 90% of the major distros out there without hassle! - and 3.5 for features and usability.

And how could we speak about the HIG (CSD UX) without mentioning the ebook reader offering from the GNOME devs...



# GNOME BOOKS

Gnome-Books, one of the lesser known offerings from the GNOME Foundation, is an e-book manager which also pulls double-duty as an e-reader par excellence. The app automagically peruses the "My Documents" folder (~/.Documents) for supported files and displays them on first-run.

The interface is clean, simple and modern, typical of most GNOME software out there. And like some of their offerings, it's fairly light. Easy on the eyes too, during those marathon reading sessions, with dark mode available as an option.

The app also supports sorting books into customized collections based on interest or genre!

## How can you get it?

Most major distros carry the gnome-books package in their repos. Flathub also has the app. Snapcraft, unfortunately, doesn't seem to carry this package.

## Should you get it?

Yes, if you want a light ebook manager and reader in one, that is well configured and gets out of the way. This user prefers it as a solid backup for calibre and Foliate, and considers it among the first apps he installs on all his machines.

Disclaimer: this user had to go hunting for relevant epubs from his hard drives (he uses the smallest possible 'root' and /home partition setup he can get away with; a holdover from his distro-hopping days), but one Ctrl C; Ctrl V and reboot later, the app was still not picking up his ebooks, so please do contact him if he's missing sth).

This user rates gnome-books a very solid 3.5/5 simply because he's a sucker for the modern, phone-ish GNOME interface ;P (he has got it to work in the past).

Rounding out this review are the old stalwarts: including FBReader, coolreader3, Lector and the like, which have been around for almost forever, and are stable af. They serve as excellent options for quick ebook perusal, but this reader prefers other tools for long-term marathon sessions. YMMV.

# REVIEW

This reader didn't include **Okular**, despite rudimentary epub support, simply because he hasn't used it often enough to review it :shrug:

## RANDOM READING RECOMMENDATIONS

This bibliophile recommends using the dark mode (with a blue-light filter; he suggests GNOME's built-in tool), with white text for best results. He also suggests using the font OpenDyslexic (a fun tip he picked up thanks to Libby (Overdrive) - which his library uses with their online catalogue). The

font is clear, bold and crisp, and perfectly suited for those marathon reading sessions.

This reader also prefers using a bigger real estate of a laptop screen over a phone, despite the portability disadvantage, and a laptop over a tablet for the keyboard shortcuts.

Another small personal note; while this reader did get the LG G8X (with the dual-screen) primarily for reading, he has since regressed to reading on his Linux box after about 6 months or so with the new hardware. The G8X' dual-screen accessory is amazing to use as an

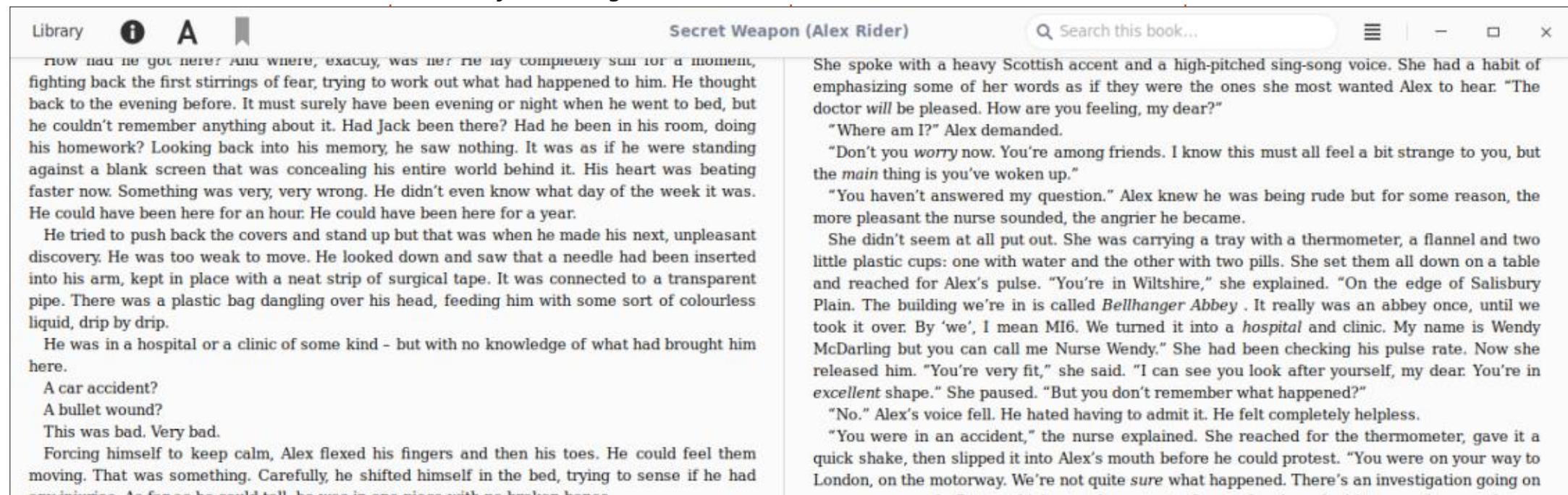
impromptu word-processing engine however, and served as the formatting tool for the majority of this review! (The quite excellent Collabora Office app for Android helped a great deal as well).

P.S: If you have trudged this far, thanks for reading! I do hope this helps in some way. Happy reading!

P.P.S: Please do ping me if there's some other things you'd like me to review, re: Linux desktops or reading!



**Siddharth** is a dentist by day, Linux explorer and bibliophile by night. This is his first time attempting an article of this kind, so he hopes it comes out well. Please email any input to [djanakirame.stormbreaker@gmail.com](mailto:djanakirame.stormbreaker@gmail.com).





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



# Q&A

Compiled by EriktheUnready

If you have a Linux question, email it to: [questions@fullcirclemagazine.org](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, UUIDs, 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.

Have you ever just had one of those days? We sold (I say we, but it was a department store selling our brand) the first batch of plasma big screens and it wasn't long before a truck stopped and offloaded four faulty ones the store wanted replaced. We had procedures in place, and even though my branch manager had promised the store manager swap-outs, we checked each one before doing so. The problem was that I could not swap them as they all had water damage. Turned out they

were from the same client and the store swapped them on their no quibble policy. We, however, did not have that policy, so everything got checked and repaired. Since we would not honour the warranties on the four previous screens, they had to refuse the fifth swap-out and also did not refund the client amid threats to get her solicitors involved. Turns out that her housekeeper had been over watering the pot plants on the shelf above the Screen and it started dripping water after about 2 minutes. So every Monday the screen got damaged and every Tuesday it was back at the store for a swap-out. I would not want to be that store manager, having to explain to the client they are now liable for 5 screens. Anyway, my take away today is to check something before raising your hand and saying it's faulty. You may see the issue, even if you don't know how to fix it. Saying "maybe it's this?" could help more than you think. Just don't repeat things you have not seen or know nothing about. (Such as explaining how you heard the multiplexer has been

affecting the power supply in your laptop. Causing the network port to go faulty.)

**Q** : Perocha, [2022/04/20 16:33] I made the switch to Ubuntu 22.04 and decided to uninstall Firefox snap. The issue I ran into was that there are no other browsers I could install to get the firefox-deb. What is the way sensei? The answer needs to involve the terminal please, it's just so much faster.

**A** : Actually there are some, but they all blow for regular users. You could install deb-get from the command line, then use deb-get to install opera(opera-stable) or brave(brave-browser) or vivaldi(vivaldi-stable). I'm not sure if Firefox was there.

**Q** : Hai, I installed Ubuntu 22.04 for the first time as my laptop is 14yrs old and needs new bling. My question is, is CD writing still a thing? I heard that it is an issue on Linux due to licensing? Anyways I

opened Synaptic and searched for dvd writer and came up empty. I would like to make and restore some simple backups. XP served me well, but getting updated/new software is out of the question.

**A** : I know Xfburn works on Ubuntu 22.04, but you have options, like Brasero, K3b, etc. I repeated your search and saw the issue, maybe search for DVD burning, Synaptic can be pedantic sometimes.

**Q** : Good morning/evening, I want to ask a question not so much about Ubuntu, but about software FOR Ubuntu. You see, I have been using WeKan, <https://wekan.github.io/> but I want something offline that I can keep, not self host. I don't want to set up my own cloud. (the advice I have been getting) It just makes my life easier when I can see what is next without needing a network or internet. I work from home and my office is a little Wendy, with just power.

**A**: Yes, I agree, I don't want my data held hostage either. You could try Brisqi, it has an installer, see above regarding deb-get and you do not need to be online to use it, only if you would like to share data between devices. You can skip the online login and start using the product locally.

**Q**: My MSI radeon is giving me grief all the time. I get random freezes, graphics corruption, weird issues I did not have in 20.04. I'm at my wits end with this thing. Now I don't know if it is an issue with me taking it on a train 200km or just Ubuntu being funky.

**A**: I have this issue also, but mine is not half as fancy as your Radeon. I suspect it is a bug. I added the oibaf PPA - <https://launchpad.net/~oibaf/+archive/ubuntu/graphics-drivers> to mine and it helped a little. You can try it and see? (there are like 3-4 reboots and updates needed) I suspect a fix is incoming real soon.

**Q**: I get to see now what people are on about with Firefox snap, I had no issues, but when I launch it, mind you, not already open, I get: "

pending update of "firefox" snap close the app to avoid disruptions " Like excuse me? The message would make sense if I were using it during an update, not on launch.

**A**: The internet is full of tutorials on how to replace the snap with a .deb, however, if you were fine with the way it was, simply close it and refresh the snap. Or, you could simply reboot.

**Q**: Hi, looking for a solution, I find only more issues like mine, without answers. I have an LG34WN650 monitor set up the way I want it. As soon as I unplug my laptop and plug it in again, all of my widgets have moved and need to be manually moved back into position. It is getting on my nerves. Why can't Kubuntu remember my settings?

**A**: The problem is not Ubuntu, you will get the same issue in any OS. The problem is that monitor is WFHD (I think is the right term), so it has screen real estate outside that of your laptop screen. This means that to display your widgets on the laptop screen, they need to be moved. When you switch screens, the extra bit is "added" the

screen is not "stretched" if that makes sense. It's not a bug but a feature.

**Q**: Now don't jump on me - I'm using Linux Lite on a core2Quad, not Ubuntu directly, but I'm sure this applies to Ubuntu as well. Catfish is like windows search, slow. Is there a way to speed it up? I have lots of PDF's I need to search through, I group them by Architect or project or address and there are hundreds of each.

**A**: Just like Windows has Voidtools everything, Linux has Fsearch or Angry search. Use those instead for instant results. <http://cboxdoerfer.github.io/fsearch/> or <https://github.com/DoTheEvo/ANGRYsearch> or if you want to search within files, try recoll: <https://www.lesbonscomptes.com/recoll/index.html>

**Q**: I had Ubuntu running in Virtualbox while I was testing it, but it had too many issues, so I deleted the VM. One small problem, all my downloads were on Ubuntu. How can I get it back?

**A**: You can try recovering the .VHD then attach it to an Ubuntu VM and see if you get your data back that way, but with dynamic virtual hard drives these days, I'd say re-download and save yourself the hassle, as they can be hyper finicky causing recovery to take a long time.

**Q**: I'm not sure if you can help, but it seems Aseba (1.6.1) can't run on Ubuntu 22.04. The error we get is: error, dependency not satisfiable: libqt4-sql-sqlite. Without it, the Thymio is basically a paperweight. I have researched the error, but have basically come up with nothing.

**A**: What if you run the version in the repo's - 1.6.99? If that does not work, I'm afraid you will have to ask on the Thymio forum. Other than that you can try in a VM with older Ubuntu or even petition the snap maintainers to make you a snap.

**Q**: I tried LocoMalito's excellent version of Endless Forms Most Beautiful, but I get this error: "error while loading shared libraries:

libssl.so.1.0.0: cannot open shared object file: No such file or directory” From Ubuntu questions I reinstalled gir1.2 etc, to no avail, as there was nothing wrong with mine to begin with. Libssl is 1.1 on Ubuntu 22.04 and E: Package 'libssl1.0.0' has no installation candidate. This used to work on Ubuntu 14.04, so... I got a copy of libssl1.0.0\_1.0.2n-1ubuntu5.9\_amd64.deb, but it did not work, instead branching into a gtk3 error.

**A** : Beware of dodgy sites that offer .deb-files. Go to <http://security.ubuntu.com/ubuntu/pool/main/o/openssl1.0/> and grab the 32-bit version and try again. I think the 64-bit version may be the issue, uninstall the 64-bit version first. The whole 32-bit subsystem is not needed. If all else fails, try the Lutris recipe version. (quick Google result)

**Q** : I’m running Xubuntu and suddenly it is taking twice as long to boot. Systemd-analyze blame put’s it squarely at the door of nmbd.service, that takes almost a minute to wake up. On top of that there is NetworkManager-wait-online.service that push it over a

minute. What do these do and why is it taking so long. <removed>

**A** : The wait service does just that, it waits. It waits for the internet to be available, so it is nothing essential. The nmbd service is also not critical, you can mask them to see if it helps. Only remove them after rebooting a few times. You could also try preload, the effects of preload are not immediate and may add to the boot time, but should be good after about 10 reboots. The syntax is: `sudo systemctl <disable/mask> nmbd.service`

**Q** : Miner69er, [2022/05/01 01:14] I have a ghost line running across the bottom 10% of my screen I can’t seem to get rid of. Xubuntu 22.04 fresh upgrade. Disk Usage: 33/146GB (24%), Memory Usage: 2702/3825MB (70.64%). Could it be a setting in conky?

**A** : 9/10 it is a setting – Go to window manager tweaks -> Composter and turn off “shadows under dock windows” and it will go away. (I did this on Manjaro and it should work on Ubuntu) If not, let me know.

**Q** : I have tried 3 times now to install Ubuntu as my box came with Windows, but it says I’m out of space? I tried Ubuntu 20.04 and 22.04 and Kubuntu 22.04 so far.

**A** : During the install there is an option for installing Ubuntu using the entire drive, if you just next, next, next, it installs them side-by-side every time. Linux does not assume you are an idiot, so you will have to read the messages from now on.

**Q** : Guys, I have a Matrox c420 display adapter in my low profile box, I run the Ubuntu drivers, but it does not find any Matrox drivers. There are older drivers on their website here, <https://www.matrox.com/en/video/apps/drivers/graphics/download?id=667>, but I don’t know the in’s or out’s.

**A** : As far as I know, those are actually ATI/AMD Radeon chips, so you should be good without installing the proprietary driver. Otherwise see above about adding the oibaf repository.



**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://catieinmeowmeowland.com/>

Price: 10-15 USD

Blurb: *"Catie in MeowmeowLand is a classical humorous point-and-click adventure game. Help little Catie get back home from the bizarre cat world of MeowmeowLand!"*

I am all for Indie games, but I draw the line at moon-puzzle clickers. Especially when they are forced, and with really low value toilet humour. You will understand what I mean soon.

The game starts you out with an Alice in Wonderland rip-off, where a cat, wearing playing cards, runs along, holding a pocket watch and jumping down a rabbit hole. There is no voice acting, other than a few semi-words. Katie, our protagonist, runs after the cat to the hole, where she is kicked down, a lá Monty Python's flying circus, by a foot that comes out of another hole and goes back whence it came. Hitting the bottom of the hole, she bounces off overgrown cats and is

swallowed. Then she emerges from the cat's butt-hole. There is a cut scene of the "meow-meow" going left-to-right, and you have to follow. You have a bird with a scroll as your hint. The puzzle is straightforward, you have to wake a jelly, so he will go in a hole for you to cross. Weird, but I'm still

invested. Oh, I did not mention this, you don't control Catie, you interact with the world, and once done, click Catie to move.

Second scene. Your path is blocked by a cartoon-y 0.16 ton block. After you have clicked on everything, you take a hint. There

are another pair of spectacles in a 3D-glasses wearing cat's lair, that you need to put on some koala creature on a lamp post that collapses behind the scenery when you touch it, which gives the creature lazer eyes, that melt an ice-cream cone a pink bug is holding, that the cat was licking. (I will include a picture for you to see). The cat now goes and licks a lever (why?). This leans the cat forward, for you to get a key, that opens a keyhole in the ground, to get a balloon, to put on a pipe, to fill with something, but it is not even indicated. You take the balloon and tie it to 0.16 ton block and it floats away. You now link said pipe (the one you filled the balloon with) with a piece of brass the 0.16 ton dropped, to make another bug move, to reveal a spring-loaded platform to shoot you into the background. (This bug is one-sixth your size, how is the spring platform held down by it?) .

There is no way, other than clicking the hint, to solve this one. I don't know about you, but there is no sense of accomplishment in



that. If I wanted participation prizes, I'd go to a modern school. The same holds true for the next scene, where you need to find a bell, tie it to the top snake's tail (you find two snakes by clicking

around in the top-right side of the screen) so it will go in a knot, so you can give it to the large cat on the sofa, so he can bat it away with his fan, so the fan will drop to make a smaller cat enter the scene. If any

of this made any sense to you, please let me know at [misc@fullcirclemagazine.org](mailto:misc@fullcirclemagazine.org), and we will mention it as soon as we can.

The music, there is not much to mention either. It is that old-timey boop-boop-boop wind up organ from a carnival in the background, occasionally broken with oohs and aahs from Catie or "tick-tock, tick-tock" from the meow-meow.

I'm sorry, but games are supposed to be fun, this is not; not even the kids liked it. Don't waste your money and I won't waste my time any further on this.



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

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

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