



Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #173 - September 2021



UEFI CLONE AND PORTABLE

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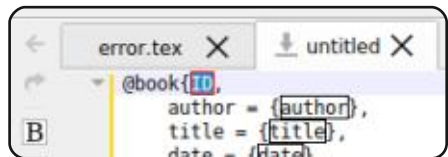
Photo: Bill Dickinson (Flickr.com)



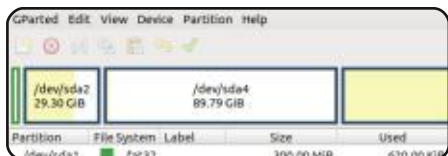
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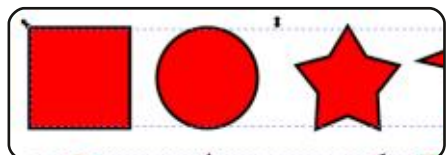
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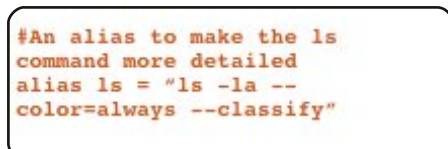


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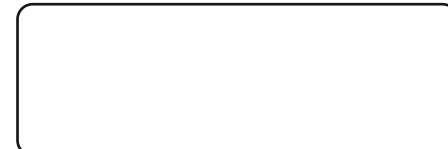
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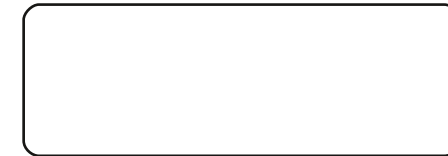
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WELCOME TO THE LATEST ISSUE OF FULL CIRCLE

This month we have the usual suspects of Python, Inkscape, LMMS, Latex, and Micro this, that, and the next thing. Filling the third HowTo space this month is a follow up from a previous article. Remember that article on creating a portable clone of your system? Well, this month we have the next part of the progression which is to make your portable clone compatible with UEFI.

Elsewhere, we have my review of Linux Lite, and Erik's review of Photofilmstrip. I'm hoping by next month we'll begin Adam's reviews of the 21.10 series.

Ubuports have released OTA-19 which is mostly bug fixes and, hopefully, sets the way for Touch to move up from the old 16.xx series that it's based on. Fingers crossed!

Don't forget: if you're looking for some help, advice, or just a chit chat: remember, we have a **Telegram** group. I mention this as I've been giving out the wrong link in a couple of emails. The (new and updated) link is: <https://t.me/joinchat/24ec1oMFO1ZjZDc0>. I hope to see you there. Come and say hello.

Anyway, stay safe, and all the best for 2021!

Ronnie

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LINUX 5.14 KERNEL

RELEASED:

08/30/2021

After two months of development, Linus Torvalds has released the Linux 5.14 kernel. Among the most notable changes: new system calls `quotactl_fd()` and `memfd_secret()`, removal of `ide` and `raw` drivers, new I/O priority controller for `cgroup`, `SCHED_CORE` task scheduling mode, infrastructure for creating loaders for verified BPF programs.

The new version received 15883 fixes from 2002 developers, patch size - 69 MB (changes affected 12,580 files, added 861501 lines of code, removed 321,654 lines). About 47% of all changes introduced in 5.14 are related to device drivers, approximately 14% of changes are related to updating code specific to hardware architectures, 13% are related to the network stack, 3% are related to file systems and 3% are related to internal kernel subsystems.

<https://lkml.org/lkml/2021/8/29/382>

BETA VERSION OF MULTITEXTOR:

08/31/2021

A beta version of the console cross-platform text editor Multitextor is available. The project code is written in C++ and is distributed under the BSD license. Linux, Windows, FreeBSD and macOS is supported. Ready assemblies are generated for Linux (snap) and Windows.

<https://github.com/vikonix/multitextor>

A COMPLETELY FREE VERSION OF THE LINUX-LIBRE 5.14 KERNEL IS AVAILABLE:

08/31/2021

The Latin American Free Software Foundation, with a short delay, published a completely free version of the Linux 5.14 kernel

- Linux-libre 5.14-gnu1, stripped of firmware elements and drivers containing non-free components or pieces of code whose scope is limited by the manufacturer. In addition, Linux-libre disables the kernel's functions for loading non-free components that are not included in the kernel distribution, and removes the mention of using non-free components from the documentation.

<https://www.fsfla.org/pipermail/linux-libre/2021-August/003439.html>

NTFS-3G RELEASES WITH VULNERABILITY

ELIMINATION:

08/31/2021

More than four years after the last release, NTFS-3G 2021.8.22 package is out. It includes a free driver operating in user space using the FUSE mechanism and a set of utilities `ntfsprogs` for manipulating NTFS partitions. The project code is distributed under

the GPLv2 license. The driver supports reading and writing data on NTFS partitions and can run on a wide range of operating systems that support FUSE, including Linux, Android, macOS, FreeBSD, NetBSD, OpenBSD, Solaris, QNX, and Haiku. The driver-provided implementation of the NTFS file system is fully compatible with Windows XP, Windows Server 2003, Windows 2000, Windows Vista, Windows Server 2008, Windows 7, Windows 8, and Windows 10. The `ntfsprogs` suite of utilities allows you to perform operations such as creating NTFS partitions, integrity checking, cloning, resizing and recovering deleted files. Common components for working with NTFS used in the driver and utilities have been moved to a separate library.

<https://sourceforge.net/p/ntfs-3g/mailman/ntfs-3g-devel/?viewmonth=202108>

ONLYOFFICE Docs 6.4

ONLINE EDITOR:

08/31/2021

The ONLYOFFICE DocumentServer 6.4 release has been published with the server implementation for ONLYOFFICE online editors and collaboration. The project code is distributed under the free license AGPLv3 .

In the near future, ONLYOFFICE DesktopEditors update is expected, built on a single code base with online editors. Desktop editors are designed as desktop applications that are written in JavaScript using web technologies, but combine client and server components in one set, designed for self-sufficient use on the user's local system, without accessing an external service. For collaboration at your facilities, you can also use the Nextcloud Hub platform , which provides full integration with ONLYOFFICE.

<https://www.onlyoffice.com/blog/2021/08/onlyoffice-docs-v6-4-with-conditional-formatting/>

NEW VERSION OF

SMPLAYER:

09/01/2021

SMPlayer 21.8 multimedia player, that provides a graphical add-on over MPlayer or MPV, has been released. SMPlayer features a lightweight interface with the ability to change themes, support for playing videos from YouTube, support for downloading subtitles from opensubtitles.org, flexible playback settings (for example, you can change the playback speed). The program is written in C++ using the Qt library and is distributed under the GPLv2 license.

<https://blog.smpayer.info/smpayer-21-8-has-been-released/>

ARMBIAN 21.08 RELEASED:

09/01/2021

The Armbian 21.08 Linux distribution has been released, providing a compact system environment for a variety of ARM-based single board computers, including various Odroid, Orange Pi, Banana Pi, Helios64, pine64, Nanopi and Cubieboard models powered by Allwinner, Amlogic, Actionsemi, Freescale / NXP, Marvell Armada,

Rockchip and Samsung Exynos.

They package bases of Debian 11 and Ubuntu 21.04 are used, 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 a compressed form and flushed to the drive once a day or at shutdown. The /tmp partition is mounted using tmpfs. The project supports more than 30 variants of Linux kernel builds for different ARM and ARM64 platforms.

<https://forum.armbian.com/topic/18874-armbian-2108-has-been-released/>

LINUX FROM SCRATCH 11 AND BEYOND LINUX FROM SCRATCH 11 RELEASED:

09/02/2021

New editions of Linux From Scratch 11 (LFS) and of Beyond Linux From Scratch 11 (BLFS), as well as editions of LFS and BLFS with systemd. Linux From Scratch provides instructions for building a

basic Linux system from scratch using only the source code of the required software. Beyond Linux From Scratch complements LFS instructions with information on building and configuring about 1000 software packages covering a variety of applications, from DBMS and server systems to graphical shells and media players.

A major change in the version number is due to the transition to a common hierarchy of executable files and libraries, which implies placing all files in the /usr hierarchy using symbolic links to redirect the contents of /bin to /usr/bin, /sbin to /usr/sbin and /lib to /usr/lib.

<https://lists.linuxfromscratch.org/sympa/arc/lfs-announce/2021-09/msg00000.html>

NITRUX 1.6.0 RELEASES WITH NX DESKTOP:

09/02/2021

The Nitrox 1.6.0 distribution, built on Debian, KDE technologies and the OpenRC init system has been published. The distribution develops its own NX Desktop, which is an add-on over the user's KDE Plasma

environment. ApplImages are being promoted to install additional applications. The boot images are 3.1 GB and 1.5 GB in size. The developments the project makes, are distributed under free licenses. NX Desktop offers a different style, its own implementation of the system tray, notification center and various plasmoids, such as a network configurator and a media applet for volume control and playback control of multimedia content. They also include applications from the MauiKit suite , including the Index file manager (you can also use Dolphin), Note text editor, Station terminal emulator, Clip music player, VWave video player and Pix image viewer.

<https://nxos.org/changelog/release-announcement-nitrux-1-6-0/>

RELEASE OF KDE PLASMA MOBILE 21.08:

09/02/2021

The release of the mobile platform KDE Plasma Mobile 21.08 is out, based on the mobile edition of the Plasma 5 desktop, the KDE Frameworks 5 libraries, the Ofono phone stack and the

Telepathy communication framework. To display graphics in Plasma Mobile, the kwin_wayland composite server is used, and PulseAudio is used for sound processing. At the same time, the release of a set of mobile applications, Plasma Mobile Gear 21.08, has been prepared. Qt, a set of MauiKit components and the Kirigami framework are used from the KDE Frameworks, to create the application interface, which allows you to create universal interfaces suitable for smartphones, tablets and PCs.

<https://www.plasma-mobile.org/2021/08/31/plasma-mobile-gear-21-08/>

RELEASE YT-DLP:

09/02/2021

There was a new release of yt-dlp, a utility to download audio and video from services like YouTube. The utility is a fork of youtube-dl based on the now -defunct youtube-dlc project. The main focus of the development of yt-dlp is on adding new features and fixes, as well as maintaining all the relevant features of the original project.

<https://github.com/yt-dlp/yt-dlp/releases/tag/2021.09.02>

OPENWRT 21.02.0

RELEASED:

09/05/2021

A major new release of the OpenWrt 21.02.0 is out, targeting use in various network devices such as routers, switches and access points. OpenWrt supports many different platforms and architectures and has a build system that allows you to easily and conveniently cross-compile, including various components in the assembly, which makes it easy to create a ready-made firmware or disk image adapted for specific tasks with the desired set of pre-installed packages. Builds are generated for 36 target platforms.

<https://lists.infradead.org/pipermail/openwrt-devel/2021-September/036260.html>

WAYLAND-BASED KDE

SESSION IS STABLE:

09/05/2021

Nate Graham, who leads the QA team for the KDE project, announced the stabilization of the KDE Plasma desktop using the Wayland protocol. Nate has already personally switched to using a KDE session based on Wayland in his daily work and all the standard KDE applications are satisfactory, but some problems with third-party applications remain.

Recent changes to KDE mention the implementation of the ability to use a drag-and-drop interface between programs using Wayland and running using XWayland. The Wayland-based session resolved several issues with NVIDIA GPUs, added support for changing the screen resolution on startup in virtualization systems, improved background blur, ensured preservation of virtual desktop settings, and provides the ability to change RGB settings for the Intel video driver.

<https://pointieststick.com/2021/09/03/this-week-in-kde-gazillions-of-bugfixes/>

ULTIMAKER CURA 4.11

RELEASED:

09/12/2021

A new version of Ultimaker Cura 4.11 is available, providing a graphical interface for preparing models for 3D printing. Based on the model, the program determines the scenario for the operation of a 3D printer with the sequential application of each layer. In the simplest case, it is enough to import the model in one of the supported formats (STL, OBJ, X3D, 3MF, BMP, GIF, JPG, PNG), select the speed, material and quality settings and send the print job. There are plugins for integration with SolidWorks, Siemens NX, Autodesk Inventor and other CAD systems. The CuraEngine engine is used to translate the 3D model into a set of 3D printer instructions. The project code is written in Python and is distributed under the LGPLv3 license. The GUI is built with frameworkUranium using Qt.

<https://github.com/Ultimaker/Cura/releases/tag/4.11.0>

REVOLT - ALTERNATIVE TO DISCORD:

09/12/2021

The Revolt project develops a communications platform aimed at creating an open source analogue of the proprietary Discord messenger. Like Discord, the Revolt platform is focused on creating platforms for communication between communities and groups with common interests. Revolt allows you to run your own communication server at its facilities and, if necessary, ensure its integration with a website or communicate using available client applications. For fast server deployment, a Docker container image is offered. The next releases are expected to support bots, a full-fledged moderation system and modules for integration with Discord and Matrix. They plan to implement support for secure chats (E2EE Chat), which use end-to-end encryption on the side of the participants, in the long run.

<https://revolt.chat/>

TERRAFORM PROJECT NEWS:

09/13/2021

HashiCorp explained why they recently added a note to the open source configuration management platform Terraform repository about temporarily suspending peer review and accepting community pull requests. The note was perceived by some contributors as a crisis in Terraform's open development model.

Terraform developers were quick to reassure the community and stated that the added note was misunderstood and was added only to clarify the decrease in parsing activity from the community due to lack of staff.

The process of recruiting new engineers is currently underway, and the staffing problems are planned to be resolved in a few weeks, after which they will also receive pull requests from the community. There are currently over a hundred open engineering positions on the HashiCorp job list.

<https://www.hashicorp.com/blog/terraform-community-contributions>

MIDNIGHTBSD PROJECT SERVER HACKED:

09/12/2021

The developers of the MidnightBSD project, who develop a desktop-oriented operating system based on FreeBSD with elements ported from DragonFly BSD, OpenBSD and NetBSD, warned users about identifying traces of a compromise on one of their servers. The hack was carried out through the exploitation of the CVE-2021-26084 vulnerability discovered at the end of August in the proprietary Confluence collaboration engine (Atlassian provided the opportunity to use this product for free for non-commercial and open source projects).

Apparently, the attack was not targeted and the MidnightBSD project became one of the victims of massive hacks of servers with vulnerable versions of Confluence, after the attack, malware was installed aimed at mining cryptocurrency. Currently, the software of the compromised server has been reinstalled from

scratch and 90% of the services disabled after the hacking and has been returned to service. It was decided to postpone the upcoming release of MidnightBSD 2.1

<https://twitter.com/midnightbsd/status/1434543206067159041>

A THIRD PARTY IS TRYING TO TRADEMARK POSTGRESQL IN EUROPE AND THE US:

09/13/2021

The PostgreSQL DBMS development community faced an attempt to take over the project's trademarks. Fundación PostgreSQL, a non-profit organization not officially affiliated with the PostgreSQL developer community, has registered the PostgreSQL and PostgreSQL Community trademarks in Spain,

and has applied for similar trademarks in the US and the European Union.

<https://www.postgresql.org/about/news/trademark-actions-against-the-postgresql-community-2302/>

POSTGRESQL CONFERENCE TO BE HELD IN NIZHNY NOVGOROD, RUSSIA:

09/16/2021

On September 30, Nizhny Novgorod will host PGConf.NN - a free technical conference on PostgreSQL DBMS. The organizers are Postgres Professional and the iCluster association of IT companies. The talks will start at 14:30. Venue - Technopark "Ankudinovka" (Akademika Sakharov st., 4). Pre-registration is required.

<https://pgconf.ru/202109>

BUDGIE DESKTOP MIGRATES FROM GTK TO EFL LIBRARIES FROM

ENLIGHTENMENT PROJECT:
09/15/2021

The developers of the Budgie desktop environment have made the decision to move away from the GTK library in favor of the Enlightenment Foundation Library (EFL), developed by the Enlightenment project. The results of the migration will be offered in Budgie 11. Notably, this is not the first attempt to move away from GTK - in 2017 the project already made a decision to switch to Qt, but later revised plans in the hope that the situation would change in GTK4.

As for Solus, the project will continue to form an alternative version based on GNOME, but this version will be marked as not curated by the project and allocated to a separate section on the download page. After the release of Budgie 11, developers will evaluate its capabilities compared to GNOME Shell and will decide to continue building the build with GNOME or discontinue by providing tools for migrating to the build from Budgie 11. In the Solus build with the Budgie 11 desktop, they planned to revise the composition of applications, replacing the GNOME applications for analogues, including those developed within the project. For example, they plan to develop their own application installation center.

<https://joshuastrobl.com/2021/09/14/building-an-alternative-ecosystem/>

LIBREOFFICE 8.0 NEW TABBED INTERFACE LAYOUT AVAILABLE

09/17/2021

Muttakin Rizal, one of the designers LibreOffice office



DistroWatch.com

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

suite, has published in his blog, a possible development plan the user interface of LibreOffice 8.0. The most notable innovation is the built-in support for tabs, through which you can quickly switch between different documents, similar to how switching between sites is carried out in modern browsers.

If necessary, each tab can be unpinned in the form of a separate window, or vice versa, convert the window into a tab. It is also possible to collapse all tabs into a drop-down list accessible by pressing the "^^" button. The header also shows a LibreOffice button to launch the initial interface, which was previously shown when starting or closing all documents, to open a file, visually evaluate recently opened documents, or create a new document based on a template. Instead of the classic menu bar (File, Edit, View, etc.), there is a panel with basic commands such as print, as well as tabs for switching toolbars. All functions of the old menu bar have been moved to the drop-down menu displayed when a separate Menu button is pressed. The panel also offers a new search form that, in addition to document content, includes searching

commands, comments, and the help system. In the upper right corner there is a button for quickly switching between design styles (that is, returning to classic / traditional / standard).

<https://libreofficemaster.blogspot.com/2021/07/libreoffice-80-ui-mockup.html>

ORACLE REMOVES RESTRICTION ON COMMERCIAL USE OF JDK: 09/17/2021

Oracle has changed the license agreement for JDK 17 (Java SE Development Kit), which provides reference assemblies of tools for developing and running Java applications (utilities, compiler, class library, and JRE). Starting with JDK 17, the package is delivered under the new NFTC (Oracle No-Fee Terms and Conditions) license, which allows free use in personal and commercial projects, and also allows use in commercial environments. Moreover, the restrictions on confirmation of download operations on the site have been removed, which allows

downloading the JDK automatically from scripts.

The NFTC license also implies the ability to receive free quarterly updates with the elimination of bugs and vulnerabilities, but these updates for LTS branches will not be released for the entire maintenance period, but only for another year after the next LTS version is released.

<https://blogs.oracle.com/java/post/free-java-license>

UBUNTU 18.04.6 LTS RELEASE: 09/17/2021

Ubuntu 18.04.6 LTS is out. This release includes only cumulative package updates that address vulnerabilities and stability issues. Kernel and software versions correspond to version 18.04.5.

The main goal of the new release is to update the installation images for the amd64 and arm64 architectures. The installation image resolves key revocation issues while fixing the second

variant of the BootHole vulnerability in the GRUB2 boot loader. Thus, the ability to install Ubuntu 18.04 on systems with UEFI Secure Boot has been restored.

It makes sense to use the presented image only for old equipment, and for new systems, the release of Ubuntu 20.04.3 LTS is more relevant. Previously installed systems could receive all the changes present in Ubuntu 18.04.6 through the standard update installation system. Support for the release of updates and security fixes for the server and desktop editions of Ubuntu 18.04 LTS will last until April 2023, after which updates will be for paid support (ESM, Extended Security Maintenance) for another 5 years.

<https://lists.ubuntu.com/archives/ubuntu-announce/2021-September/000272.html>

GIMP 2.10.28 RELEASED: 09/18/2021

Version 2.10.26 was skipped due to a serious bug detected at a late stage in the development of the release. Packages in flatpak format are available for installation

(snap package is not ready yet). The release mainly includes bug fixes. All efforts to build functionality are focused on the preparation of the GIMP 3 branch, which is in the pre-release / testing phase .

<https://www.gimp.org/news/2021/09/18/gimp-2-10-28-released/>

AN OPENCL FRONTEND WRITTEN IN RUST IS BEING DEVELOPED FOR MESA

09/19/2021

Red Hat's Karol Herbst, who is involved in the development of Mesa, the Nouveau driver, and the OpenCL open stack, has published rusticl, an experimental software implementation of OpenCL (OpenCL frontend) for Mesa written in Rust. Rusticl acts as an analogue of the Clover frontend already present in Mesa OpenCL and is also developed using the Gallium interface provided in Mesa .

The development was presented on September 17 at the XDC 2021 conference (X.Org Developers Conference). The goal was to study Rust, work out the best ways to integrate Rust into

Mesa, try out creating API implementations in another language, and test the compatibility of Rust components with the rest of the C code.

<https://gitlab.freedesktop.org/karolherbst/mesa/-/tree/rusticl/src/gallium/frontends/rusticl>

THE WINDOWSFX PROJECT WITH WINDOWS11 INTERFACE:

09/18/2021

A preview release of the Windowsfx 11 distribution is available, aiming to recreate the Windows 11 interface and Windows-specific visual effects. The environment was recreated using a specialized WxDesktop theme and additional applications. Ubuntu 20.04 and the KDE Plasma 5.22.5 desktop are used as the base. A 4.3 GB iso image is available for download. The project is also developing a paid image that includes additional features that bring the environment closer to Windows, such as a configurator, a voice assistant, Active Directory support and access to the OneDrive service.

<https://www.windowsfx.org/index.php/release-news/windowsfx-operating-system>

TESTING THE KDE PLASMA 5.23 DESKTOP

09/19/2021

A beta version of the custom Plasma 5.23 shell is available for testing. You can test the new release through the Live build from the openSUSE project and the build from the KDE Neon Testing edition project. Packages for various distributions can be found on this page. The release is expected on October 12th.

<https://kde.org/announcements/plasma/5/5.22.90/>

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=1600253699&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>



COMMAND & CONQUER

Written by Erik

LMMS Pt.9

I hope you have paid attention to the issue, as this month we will be steaming ahead. If you did not, I strongly advise that you do. However, to avoid confusion, we are looking into ZynaddsubFX (Zyn from now on) that comes with LMMS. I want you to know that as ugly as Zyn is, (Ugly as Zyn... OK, I'll see myself out) you can make almost any synth out there on the market with this. Not kidding!

Now if you really did follow along, this issue's Zyn tutorial will not be strange. I want you to put what we have covered into practical

use. Fire up LMMS and remove all the tracks from the song editor. Drag in Zyn from your instrument plug-in's. Double click it, to bring up the general settings. Click Show GUI. Edit Instrument and we will be fudging with the Pad Synth this time.

Before we actually do anything, I want to say that we are going to take a clean sound and polymorph it into something we can use as a lead in our own tune. This will teach you the basics of making something your own. This is very cool for remixing... anyway, I think so.

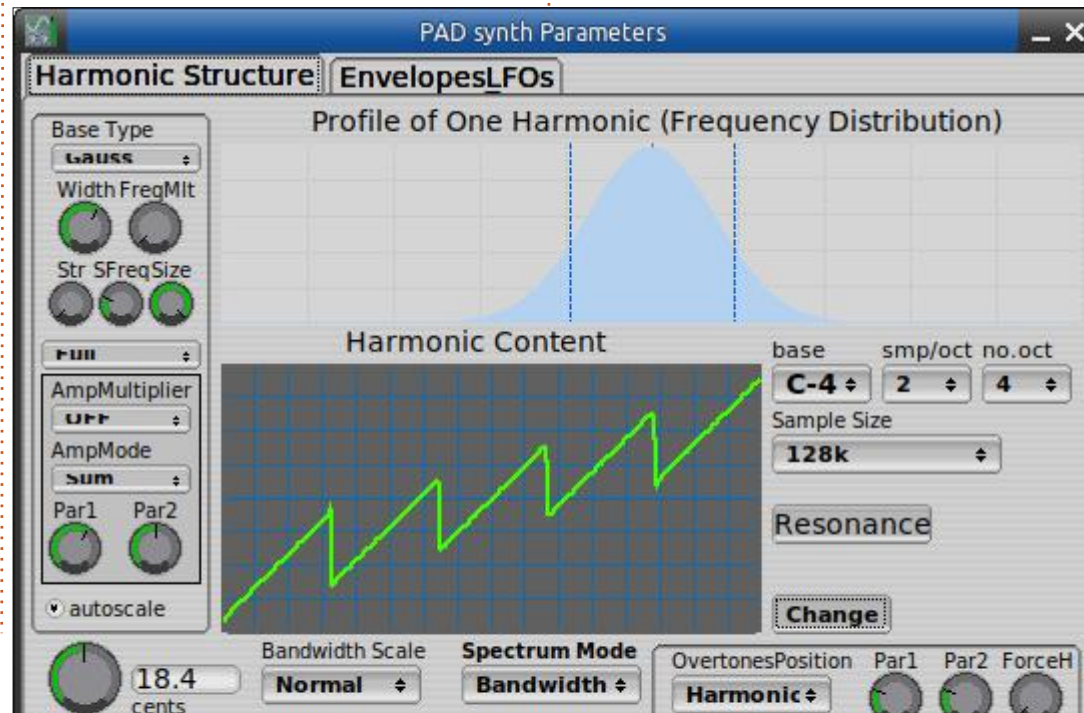
Let's mosey on over to the harmonic content editor and we can lose ourselves in a saw wave. (If at any point you get lost in this article, you need to go over the previous ones) If I did not mention this, the base function for the saw wave is "power". Use the sliders to add some teeth. I don't care how many, it is up to you, but I will add three or four with one or two of my sliders. Hit Apply and Close. Go to the little piano roll on the general settings

and you should hear a dance / trance sound. Go to the Pad Synth parameters and open the last/ second tab, EnvelopesLFO's.

This is my saw wave (below).

I like rearranging my windows as shown on the next page, top right.

This allows you to press the keys with your mouse if you do not have a MIDI keyboard, like me.





Pressing the keys around C1, I already like the sound, but we need to morph the sound into something 'different', yet usable in an electronic tune. Back to the harmonic structure tab. At the filter envelope, I will boost the attack value, and up the low pass filter on C freq and Q. On the Amplitude LFO side, I am also going to adjust the depth up. Now you may end up with a sound you don't like, but here is the secret. Apply some reverb to that sound. To do that, you can switch back to the "Edit

Instrument" window and click on effects. Here on mine, you can see the words are semi-hidden, it may be on yours too.

The “NO EFFECT” drop-down is where you want to change it with the arrows to reveal the list. Reverb is the very first one. You can also chain your effects here, a very popular option is to use the EQ to tweak your reverb'd sound. If you are a beginner, like me, you can use some of the presets in the top left of the reverb. Again, you can't see it until you press the drop down, but the first one is Cathedral 1, there is a Cathedral 2 and 3 also, but I want you to play with those to get the awesome sound you want.



Mine sounds great, just a bit too much echo, but that is something we can deal with easily. How about yours? Have you found something you like yet? This is where I leave you, <insert evil laughter here> as this is where the rabbit hole starts, I cannot tell you how deep it goes, Neo, but good luck with not sinking at least an hour deep. <insert more evil laughter here>

Now take the red pill and enjoy the ride.

As always, any comments to:
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.



My adult son (35 years old) is a network administrator for the company he works for. He works with a huge amount of servers – handling all the network needs of his company and their employees. I started teaching him about computers when he was 10 years old. He (with a very little bit of help from me) built his first computer from a motherboard, hard drive, two floppy drives and a video card. At that point, I was selling custom-built computers and he did all the basic building with the exception of the CPU and memory boards. He is also an avid gamer. Back when he was 10, I was the mean old dad who wouldn't let him have a game console (I think it was a Nintendo) because most of the games he wanted to play, he could play on his computer. For a couple of years, it really didn't sink into his brain, but he was partially placated as long as I would provide more and more complicated games as he grew in his skills. I, on the other hand, never really was able to play the games that he enjoyed. The game controller(s) confused me, and I never could figure out which darn

button to press when.



(Thanks to <https://www.bestproducts.com/tech/gadgets/g821/best-pc-game-controllers/> for the image above.)

I admit it. When it comes to game controllers, I'm a klutz. Even those games that can be played on the computer keyboard, I'm horrible at. Up until a couple of years ago, if you gave me a guitar, I could pick and chord with almost anyone who wasn't a professional. But hand me a game controller, and I'd put it back on the table as fast as I could.

I've wanted to do an article on creating games in Python for a long time, and, a few months ago (FCM168 part 116 April 2021), I showed a simple text based game when I talked about Pattern Matching coming up in Python 3.10. Text based games, I can pretty

much play. I also remember talking about PyGame many, many years ago. FINALLY I get to start talking about (as my son would say) REAL games, with graphics and everything. I'm talking about the Arcade library for Python.

Before we get into actually using and installing Arcade, we need to discuss virtual environments.

VIRTUAL ENVIRONMENTS

We all know that Python uses pip to install libraries (unless you are using Anaconda and then you usually use Conda). However, many times a package you want to try out or develop with will have dependencies that conflict with packages that you already have installed. Often you won't know that there are problems until something fails. Python, pyenv and Anaconda all provide virtual environments to get around this issue. Basically, when you create a virtual environment, you get a clean version of Python with just the bare minimum packages installed. I'll

show how to set up a virtual environment for pyenv and Python. If you use Anaconda, it's easy to find the steps with a simple web search.

PYENV

If you are using pyenv, it's very easy to get a virtual environment up and running. Here's the steps.

Create a folder for your virtual environment and cd into it. Eg:

```
$ mkdir Pyenv-Virt1
```

```
$ cd Pyenv-Virt1
```

Decide what version of Python you want to use for the virtual environment. For this project, I'm going to use 3.7.9 . Set the version for this folder.

```
$ pyenv local 3.7.9
```

Create the virtual environment and name it. You can name it pretty much anything you want. I like to preface the name with "venv" so I can easily remember it.

HOWTO - PYTHON

```
$ pyenv virtualenv 3.7.9
venv379
```

```
Looking in links: /tmp/
tmp1wbkpo45
```

```
Requirement already
satisfied: setuptools in /
home/greg/.pyenv/versions/
3.7.9/envs/venv379/lib/
python3.7/site-packages
(47.1.0)
```

```
Requirement already
satisfied: pip in /home/
greg/.pyenv/versions/3.7.9/
envs/venv379/lib/python3.7/
site-packages (20.1.1)
```

```
greg@earth:~/Desktop/Pyenv-
Virt1$
```

Activate the virtual environment and do a pip list to verify it's brand new.

```
$ pyenv activate venv379
```

```
pyenv-virtualenv: prompt
changing will be removed from
future release. configure
`export
PYENV_VIRTUALENV_DISABLE_PROM
PT=1` to simulate the
behavior.
```

```
(venv379) greg@earth:~/
Desktop/Pyenv-Virt1$
```

```
(venv379) greg@earth:~/
Desktop/Pyenv-Virt1$ pip list
```

Package	Version
pip	21.2.4

```
setuptools 47.1.0
```

```
(venv379) greg@earth:~/
Desktop/Pyenv-Virt1$
```

Notice that your terminal prompt has changed. This verifies that you are in a virtual environment. After this, you can install whatever packages you want. When you are done, deactivate the virtual environment with `pyenv deactivate`. Your prompt will return to normal.

PYTHON

Make a new folder for your virtual environment and change directory into it. Call it whatever you like.

```
greg@earth:~$ cd /home/greg/
Desktop
```

```
greg@earth:~/Desktop$ mkdir
Python-Virt1
```

```
greg@earth:~/Desktop$ cd
Python-Virt1
```

```
greg@earth:~/Desktop/Python-
Virt1$
```

Make sure that your python installation has the virtual environment library installed. Do a `pip install virtualenv`.

```
greg@earth:~/Desktop/Python-
```

```
Virt1$ pip install virtualenv
```

```
Collecting virtualenv
```

```
Downloading virtualenv-
20.7.2-py2.py3-none-any.whl
(5.3 MB)
```

```
|
| 5.3 MB 2.6 MB/s
```

```
Requirement already
satisfied: importlib-
metadata>=0.12 in /home/
greg/.pyenv/versions/3.7.9/
lib/python3.7/site-packages
(from virtualenv) (4.6.3)
...
```

```
Successfully installed
backports.entry-points-
selectable-1.1.0 distlib-
0.3.2 filelock-3.0.12
platformdirs-2.3.0 six-1.16.0
virtualenv-20.7.2
```

```
greg@earth:~/Desktop/Python-
Virt1$
```

Create your virtual environment with

```
python -m venv env
```

This will create an `env` folder. Now you can activate your virtual environment.

```
greg@earth:~/Desktop/Python-
Virt1$ source env/bin/
activate
```

```
(env) greg@earth:~/Desktop/
Python-Virt1$
```

Just as `pyenv` changes the

terminal prompt, the “normal” Python virtual environment does as well.

To deactivate the Python virtual environment, all you have to do is use the command `deactivate`.

```
(env) greg@earth:~/Desktop/
Python-Virt1$ deactivate
```

```
greg@earth:~/Desktop/Python-
Virt1$
```

INSTALLING ARCADE

Now that we have our virtual environment set up, we can finally install the Arcade package. Remember to activate the environment. For the purposes of this article, I'll be using the “standard” Python virtual environment rather than the `pyenv` version.

Use `pip` to install Arcade into your virtual environment.

```
$ pip install arcade
```

If everything goes well, your next step will be to download the platformer tutorial. You can find it at <https://github.com/pythonarcade/arcade>. I suggest that you get the entire repository

by using the download zip option. Once you have the repository downloaded, unpack it and navigate to the tutorial which is located within the repository at /arcade/examples/platform_tutorial. Copy the entire folder into the folder you have set up for your virtual environment. Finally, using a terminal window, change to your virtual environment and then into the platform_tutorial folder.

You should see about 17 files in your folder. There is an entire tutorial that walks through most of these files at https://api.arcade.academy/en/latest/examples/platform_tutorial/index.html. Each step in the tutorial is centered around one of the source files. Instead of just pointing you to the tutorial and telling you to learn completely on your own, I'll attempt to distill some of the information by looking at the first two provided program source code files. We'll start off by looking at the very first file 01_open_window.py.

This file is a skeleton that creates a simple window and sets the background color. It provides you a nice starting point for

creating your own games.

```
import arcade

# Constants
SCREEN_WIDTH = 1000
SCREEN_HEIGHT = 650
SCREEN_TITLE = "Platformer"
```

As you can see, the window will be 1000 pixels wide and 650 pixels high and will have the title Platformer. Simple enough. The next thing that gets done is to create a Python Class that will hold your actual game. You can see that the __init__ function holds the code that sets the actual screen and sets the background color and the setup function starts/restarts the game.

When you run the skeleton program, you will see a window pop up with the cornflower blue background.

```
$ python 01_open_window.py
```

You will have to click the x in the title bar or do a <ctrl> c in the terminal to close the window.

We will need to add some code in order to make the program show something other than just a pretty blue background. In your IDE or text editor, open the file 02_draw_sprites.py. This file is an

```
class MyGame(arcade.Window):
    """
    Main application class.
    """

    def __init__(self):
        # Call the parent class and set up the window
        super().__init__(SCREEN_WIDTH, SCREEN_HEIGHT,
                         SCREEN_TITLE)

        arcade.set_background_color(arcade.csscolor.CORNFLOWER_BLUE)

    def setup(self):
        """Set up the game here. Call this function to
        restart the game."""
        pass

    def on_draw(self):
        """Render the screen."""

        arcade.start_render()
        # Code to draw the screen goes here
```

The main function instantiates the class, calls the setup function and then the game runs.

```
def main():
    """Main method"""
    window = MyGame()
    window.setup()
    arcade.run()

if __name__ == "__main__":
    main()
```

expansion of the skeleton that we just ran. Between the constants at the top of the source code and the beginning of the class, you'll see the following additional lines...

```
# Constants used to scale our
```

```
sprites from their original
size
```

```
CHARACTER_SCALING = 1
```

```
TILE_SCALING = 0.5
```

HOWTO - PYTHON

These lines set the scaling for both the character sprite and the tiles. In the class, some code has been added to the class that sets up the character and some props. Between the `super().__init__` line and the `arcade.set_background_color` line, you will see the following lines...

```
# These are 'lists' that keep track of our sprites. Each sprite should
```

```
# go into a list.
```

```
self.wall_list = None
```

```
self.player_list = None
```

```
# Separate variable that holds the player sprite
```

```
self.player_sprite = None
```

As you can tell from the comments, this defines a couple of lists, one for the wall and one for the player, and a variable for the player sprite image.

```
# Create the Sprite lists
```

```
self.player_list = arcade.SpriteList()
```

```
self.wall_list = arcade.SpriteList(use_spatial_hash=True)
```

```
# Set up the player, specifically placing it at these coordinates.
```

```
image_source = ":resources:images/animated_characters/female_adventurer/femaleAdventurer_idle.png"
self.player_sprite = arcade.Sprite(image_source, CHARACTER_SCALING)
self.player_sprite.center_x = 64
self.player_sprite.center_y = 128
self.player_list.append(self.player_sprite)
```

The ground that the character and any props are located is also set as a sprite.

```
# Create the ground
# This shows using a loop to place multiple sprites horizontally
for x in range(0, 1250, 64):
    wall = arcade.Sprite(":resources:images/tiles/grassMid.png", TILE_SCALING)
    wall.center_x = x
    wall.center_y = 32
    self.wall_list.append(wall)
```

Then some crates are placed on the ground and added to the game object.

```
# Put some crates on the ground
# This shows using a coordinate list to place sprites
coordinate_list = [[512, 96], [256, 96], [768, 96]]

for coordinate in coordinate_list:
    # Add a crate on the ground
    wall = arcade.Sprite(
        ":resources:images/tiles/boxCrate_double.png", TILE_SCALING
    )
    wall.position = coordinate
    self.wall_list.append(wall)
```

The next part of the code is very important in that it creates the player sprite. The actual sprite image can be anything you like. To help new users along, the good people that created Arcade, included a few sprite images that you might need in the actual distribution package. If you look in your virtual environment at the /

`env/lib/pythonx/site-packages/arcade/resources/images` folder, you will see a number of subfolders that include various images that are already set up for you. Getting back to the code, you can see that the image locations are referenced when each image is defined as an `arcade.Sprite`. First, the player sprite is created.

Finally, the `on_draw` function of our class is modified by adding the following lines to the bottom of the function (after the `start_render()` call)...

```
# Draw our sprites
self.wall_list.draw()
self.player_list.draw()
```


HOWTO - PYTHON

While this doesn't create anything but a static image, you can see that, with a bit of planning and forethought, it is fairly simple to get the basics of a game. When you run program 02_draw_sprites.py, you will see something that looks like this (bottom left) ...

You can work through the rest of the tutorial which will get you a very basic, somewhat playable game in the file 17_views.py . When you run it, it should look something like this (bottom right) ...

There is another program you should consider downloading,

which is a map editor. Step 9 of the tutorial gives you some basic instructions on using the map editor and where you can download it. They also give you a link to the documentation for the tile/map editor to help you along.

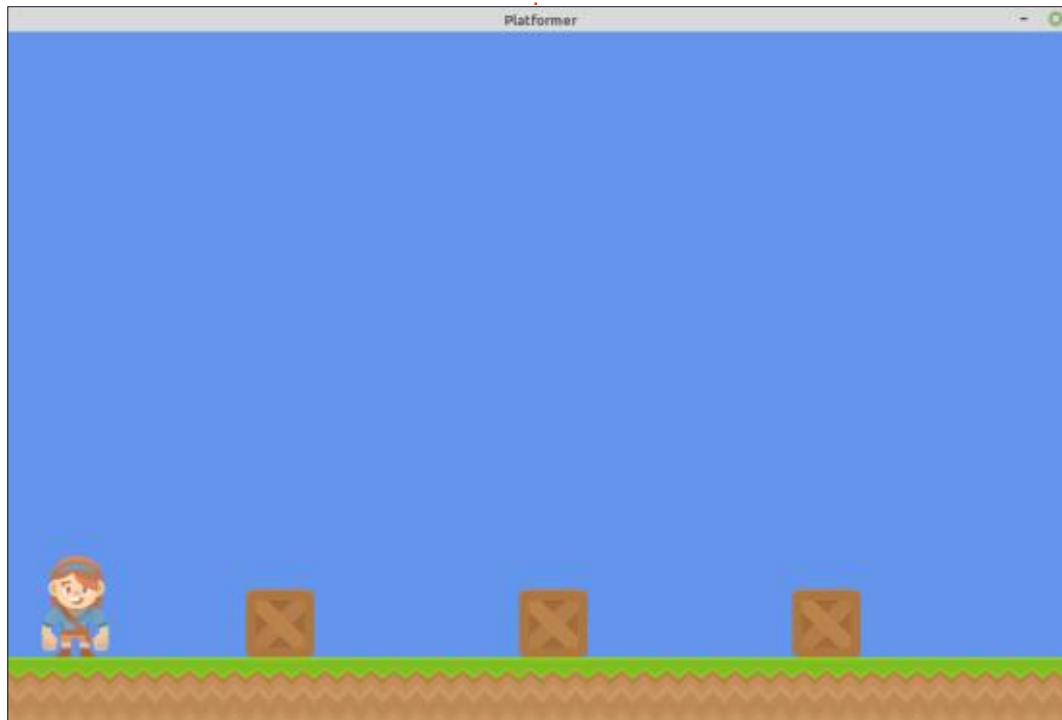
I will provide a zip file for all 17 source files of the tutorial code that you need to get started on my repository, but I strongly suggest that you download the arcade repository. There is a tremendous amount of sample files that will not only give you a large amount of information, but also should spark some inspiration for moving

forward. You can find the code at my github repository at <https://github.com/gregwa1953/FCM-173>.

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 .





HOW-TO

Written by Erik

Latex Pt.6

If you have been following along, you now have an idea of how to put down text, how to add a picture, and how to insert a table. All you did was learn one little thing per issue. If you use LaTeX for writing a non-fiction book, for instance, or a school paper, you may need to add a bibliography. Like the “share on facebook” buttons you see on a website, some websites have a “cite this” button. Granted, lots of times it may be on academic websites, but there are websites that will help you out too. (<https://www.citethisforme.com/>, <https://www.easybib.com/>, <https://www.cite.me/>, and more). If you have the option, choose “Bibtex”, to make it easy for you.

If you would like to see where I got my information from, see: <https://www.economics.utoronto.ca/osborne/latex/BIBTEX.HTM>

I need you to look under the tools menu in TeXstudio; you will see “bibliography” with the shortcut key ‘F8’. Click ‘bibliography’ or press F8. What

happened? Look at your message pane. This is what I got:

Process started: bibtex "tuto".aux

This is BibTeX, Version 0.99d (TeX Live 2017/Debian)

The top-level auxiliary file: tuto.aux

I found no \citation commands---

while reading file tuto.aux

I found no \bibdata command---

while reading file tuto.aux

I found no \bibstyle command---

while reading file tuto.aux

(There were 3 error messages)

Process exited with error(s)

Now what? These are the little things that trip up newbies. Do you have any idea what to do? Well, neither did I. (Off to stackexchange I had to rush). Looking up things and cross-referencing them, is a good way to learn, so don’t knock it.

Just as a side note: You can configure your shortcut keys in the options, but I am going default here. Vanilla TeXstudio.

To understand how many fields

there are in a bibliography file, open a new tab, then click “bibliography” in the menu, then click on “book”. The output on your form should look something like this:

```

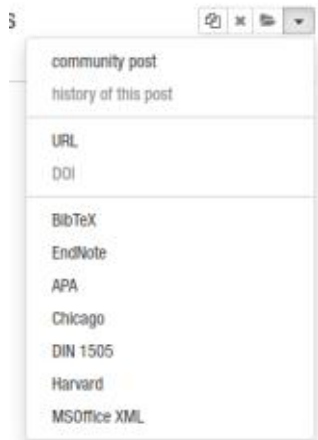
@book{[10],
  author = {author},
  title = {title},
  date = {date},
  OPTeditor = {editor},
  OPTeditora = {editora},
  OPTeditorb = {editorb},
  OPTeditorc = {editorc},
  OPTtranslator = {translator},
  OPTannotator = {annotator},
  OPTcommentator = {commentator},
  OPTintroduction = {introduction},
  OPTforeword = {foreword},
  OPTafterword = {afterword},
  OPTsubtitle = {subtitle},
  OPTtitleaddon = {titleaddon},
  OPTmaintitle = {maintitle},
  OPTmainsubtitle = {mainsubtitle},
  OPTmaintitleaddon = {maintitleaddon},
  OPTlanguage = {language},
  OPToriglanguage = {origlanguage},
  OPTvolume = {volume},
  OPTpart = {part},
  OPTedition = {edition},
  OPTvolumes = {volumes},
  OPTseries = {series},
  OPTnumber = {number},
  OPTnote = {note},
  OPTpublisher = {publisher},
  OPTlocation = {location},
  OPTichn = {ichn},
  OPTichn = {ichn}
}

```

So don’t be put off by the bib output that you get on a web page.

Just to show you where to look, open this web page please: <https://www.bibsonomy.org/bibtex/226d84980b959304913f957400bb993e5/droessler>

To the right of the page, you will see a ‘copy’ icon, an ‘x’, an ‘open’ icon, and a drop-down arrow. Click the drop-down arrow to reveal the following menu.



BibSonomy

The blue social bookmark and publication sharing system.

home groups popular genealogy

user / @droessler The Biblatex Package, ...



The Biblatex Package. Programmable Bibliographies and Citations

P. Lehman, (2015)



Now click on 'BibTeX'. A new window will be displayed with the necessary information. Click on "Copy citation to your local clipboard".

THE MANUAL WAY

Create a new file and make sure the extension is '.bib'. Even if Linux does not care about extensions, TeX does! Explanation from Wikipedia:

"In the words of the program's author Oren Patashnik:

Here's how BibTeX works. It takes as input:

- *an .aux file produced by LaTeX on an earlier run;*
- *a .bst file (the style file), which specifies the general reference-list style and specifies how to format individual entries, and which is written by a style designer [...] in a special-purpose language [...], and*
- *.bib file(s) constituting a database of all reference-list entries the user might ever hope to use.*

BibTeX chooses from the .bib file(s) only those entries specified by the .aux file (that is, those given by

LaTeX's \cite or \nocite commands), and creates as output a .bbl file containing these entries together with the formatting commands specified by the .bst file [...]. LaTeX will use the .bbl file, perhaps edited by the user, to produce the reference list. "

OK, time for some hands-on.

Create two new tabs and save them as ref.tex and ref.bib so we can get going.

Copy the output from the website above into ref.bib and save it.

Then add the "code" (top right) to ref.tex so I can get to explaining.

You should be familiar with everything up to \cite. I have cited the article in my reference (ref.bib) by the unique id, which is the first part after the "type of reference" (@article{Lehman2015, Masters2014}). Not all references will look this way, so understand where it goes. If you need to cite multiple documents or articles, simply separate your references by commas.

Are you with me? Ok, this is

```
\documentclass[a4paper, twocolumn]{article}
\usepackage{lipsum}

\title{Bibliography}
\author{Donald Trump}

\begin{document}
  \maketitle

\begin{abstract}
  \lipsum[1]
\end{abstract}

\tableofcontents

\section{colouring books}

I have read these colouring books: \cite{Lehman2015}

\bibliographystyle{plain}
\bibliography{ref}

\end{document}
```

where you need to pay attention; bibliographies have style. Yes, you heard me, \bibliographystyle{style}, I use plain, but there are many types: https://www.overleaf.com/learn/latex/Bibtex_bibliography_styles, <https://www.bibtex.com/s/bibliography-style-base-plain/>

To understand the \bibliography{ref}, I want you to remove it and recompile your document. Seeing is believing. ;)

I suggest first getting the 'how' down before you start messing

with styles; as for newbies, they will not make much sense. As always, please feel free to change anything, make mistakes, have fun. This is how we learn.

You know where to send emails: 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.



HOW-TO

Written by Eric Wood

Portable UEFI Clone on a 4K Drive

In a previous article, I described a step-by-step procedure to create a hybrid (boots on BIOS or UEFI system) portable clone of your system on a 512 byte sector USB drive. Although I had tested the technique successfully on a number of devices I had laying around, when I tried it on a recently purchased SSD, it did not work! It turned out that the new SSD had physical/logical sectors of 4096 bytes and this caused two problems with the method employed that made the drive non-bootable. I was able to track down and resolve the difficulty, although it does require a different set of steps to those in the earlier article. As many newer drives are now in 4K format, I thought it would be useful to share the results of my findings. (The process described here does work on 512-byte sector drives with only one minor modification – see Technical Note #2). One important thing to note before we begin is that BIOS booting is not generally supported from drives with 4096-byte sectors; consequently, we cannot create a hybrid clone on such a drive. The resulting cloned

system is still portable, however, and should boot on whatever UEFI machine it is plugged into.

It is not possible to anticipate the particulars of every conceivable system configuration so I have made a few assumptions:

- The system to be cloned is a typical installation with the Ubuntu system on a single partition, and no swap partition.
- The source computer that you are cloning boots in UEFI mode and has a separate EFI partition.
- The destination drive must be big enough to accommodate the Ubuntu partition that we are going to clone – the whole partition, not just the used space! (Resizing your Ubuntu partition to make it smaller with gparted is quite safe – the Ubuntu installer does this when you set up a dual boot installation – BUT there is always the potential for data loss so don't do it unless you have backed up anything you cannot afford to lose.)
- Many of these steps require Administrator privileges so make sure you know how to use this facility on your system as it varies a

bit across Ubuntu flavours.

I have written this article for the non-expert (like myself) and so I have included a lot of cross-checks to avoid errors. More experienced readers can probably skip some of these steps if desired.

GETTING INFORMATION ABOUT YOUR SYSTEM

Boot your computer normally and open a terminal. Type:

```
df
```

and look under the “Mounted On” column to find the root symbol (/). On my machine, this is opposite /dev/sda2, and this tells me that the

system presently running is on Partition #2 (below). Make a note of this number from your own system, the drive name might change after rebooting but the partition number won't, so it is important to remember which partition you are going to copy.

Now type:

```
sudo mkdir /00_CLONE
```

to provide an easily recognizable marker for the cloned system in the root folder.

CLONING YOUR SYSTEM

Now reboot your computer from a Live USB stick; you can use the

Partition	File System	Label	Size	Used	Unused	Flags
/dev/sda1	fat32		300.00 MiB	620.00 KiB	299.39 MiB	esp
/dev/sda2	ext4	Hybrid	29.30 GiB	19.72 GiB	9.58 GiB	
/dev/sda4	ext4	Storage_A	89.79 GiB	959.73 MiB	88.85 GiB	
/dev/sda3	ext4	Storage_B	113.50 GiB	64.14 GiB	49.37 GiB	

HOWTO - PORTABLE UEFI CLONE

install media for your system or any other Ubuntu flavour – I am using a clone of my base system on a USB. Booting from a live USB is important as you will be working on the system partitions, and it is much safer if nothing is mounted. This way, we can be sure that your base system in particular is unmounted, and not damaged by anything that you do. So, begin by opening a terminal and typing

```
sudo umount -a
```

to unmount everything.

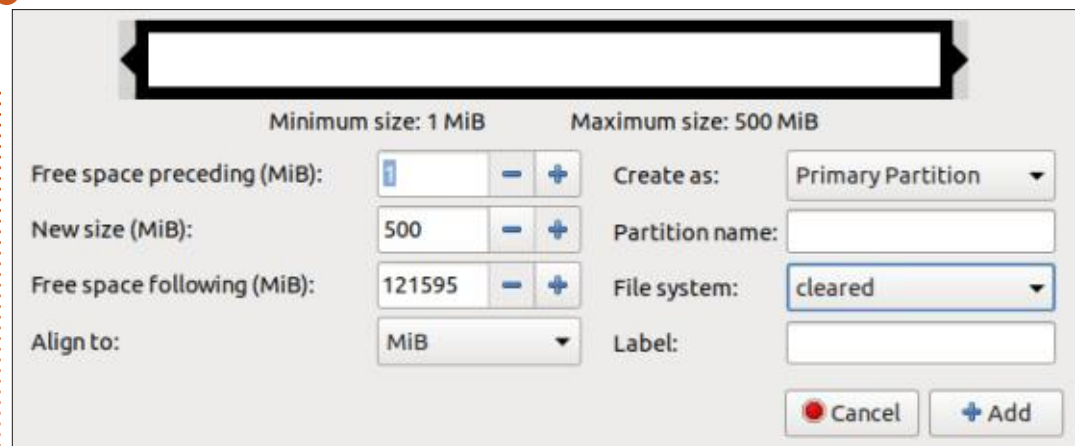
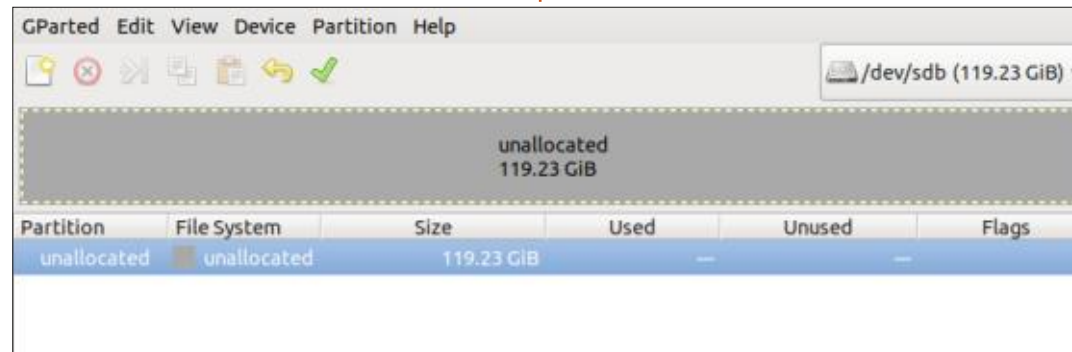
Plug in your installation media to a vacant USB port.

Open the program gparted (included as part of the live USB)

This is my “testing” laptop and you can see that I have a 250GB drive designated as /dev/sda with 4 partitions (below). I have arranged

my system with 2 partitions for storage of personal files (/dev/sda3 and /dev/sda4), so my Ubuntu system partition (/dev/sda2, mounted at /) is just 30GB. If you click the pulldown menu at the top-right, you will get the partition layout for the other drives on the system, in this case the portable SSD that you will use to clone your system, as well as the Live USB that you booted from.

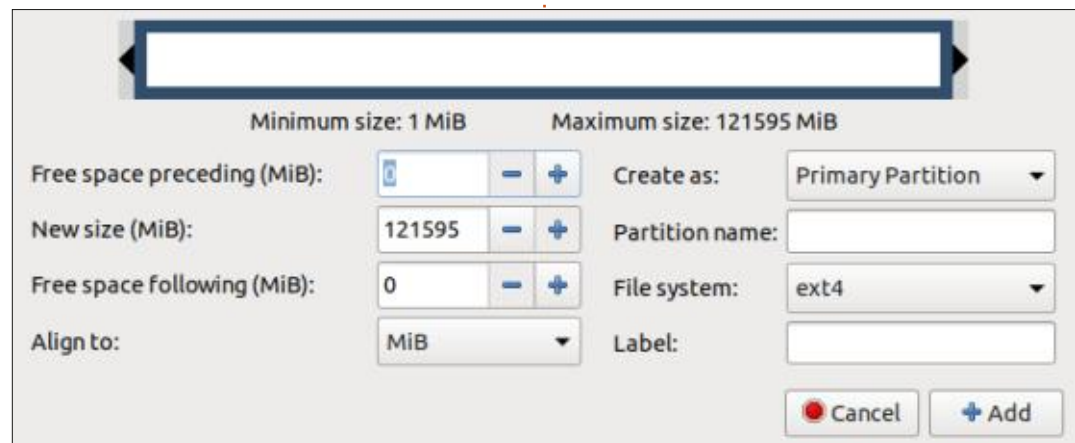
If your drive contains any data, it will be completely destroyed by the following process so make sure you don’t need anything that is left on the SSD. Select the SSD from the drop-down menu, click on Device > Create Partition Table, and make sure you choose “gpt” as the partitioning system so that it is compatible with UEFI booting. Click Apply to make the change, your device now shows unallocated space for the entire drive (top right).

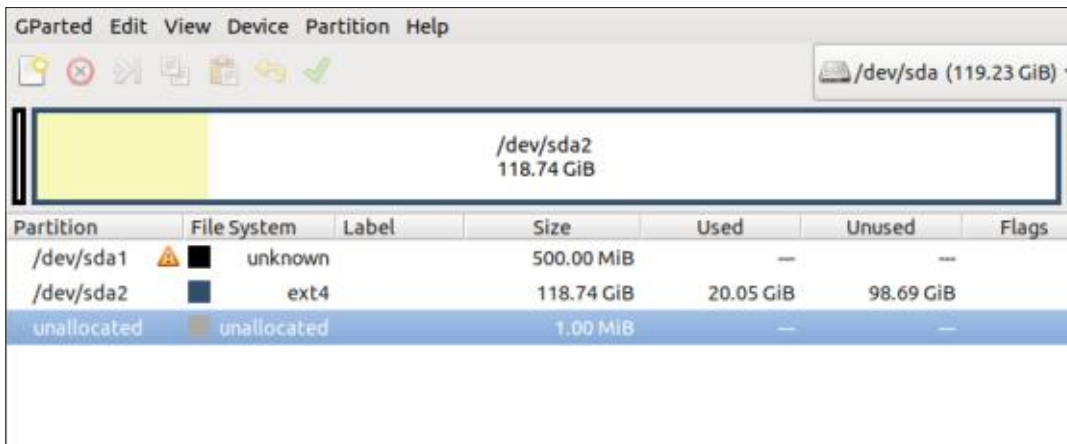


to reboot. It is unclear why this message sometimes appears when other times it does not; however, it seems that clicking Ignore and proceeding does not appear to cause any problems. If this makes you nervous, close gparted, reboot, and then proceed.

Now select Partition > New to create the first of 2 partitions.

The “Free space following (MiB)” will vary depending on the size of your SSD, but the other values should be as shown here – note the use of “cleared” in the File System box, this ensures there are no filesystem remnants still present (bottom right). Click “Add” and then click on the green checkmark at the top to apply this change. Do NOT format this partition to FAT 32, it will not work for devices with 4096-byte sectors. (See Technical Note





#1 at the end of the article for a full explanation of why this is the case).

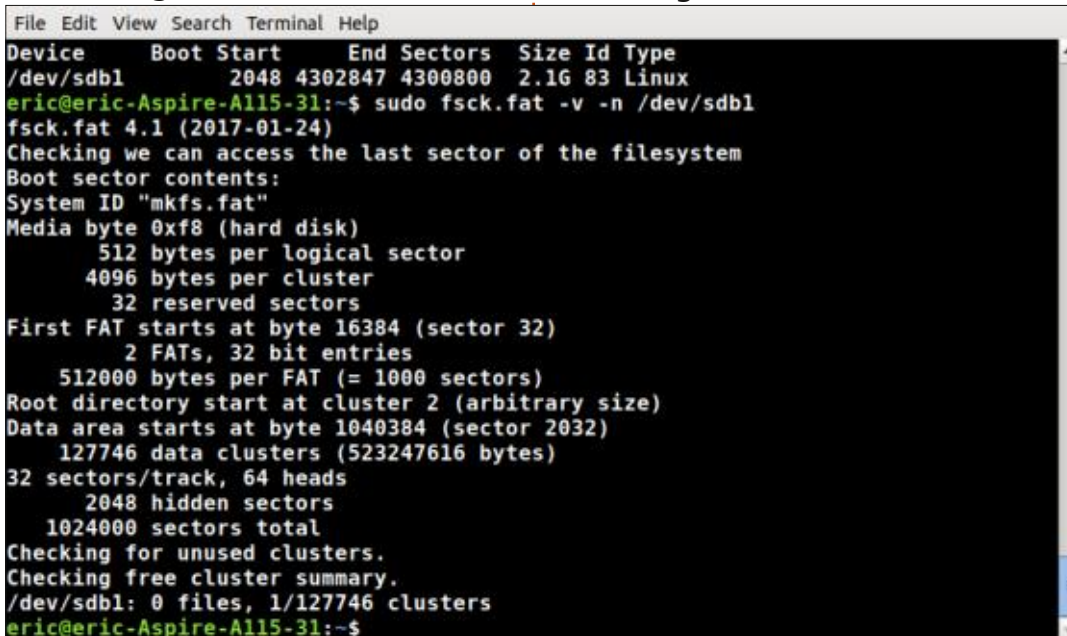
Next select Partition > New to create the second partition for the Ubuntu system itself and adjust the values as appropriate (above).

Once again, select Add and then

apply this change.

Each of these partitions serves an important function: Partition #1 provides a place for the UEFI GRUB bootloader files, and Partition #2 contains your Ubuntu filesystem.

Now go back to select the



device name of your hard drive, right-click on your Ubuntu partition, and select Copy. Switch to the SSD, double check that Partition #2 is unmounted, right-click on it, and select Paste. Depending on the size of the partition you are copying, this could take an hour or more; for this size of partition it was about 15 minutes. This procedure makes an exact and complete copy of your Ubuntu partition, including the label if there is one, and the UUID (Universal Unique ID). Furthermore, gparted will automatically “grow” the filesystem to use all of the partition (bottom left).

Once this copying step is complete, right-click on Partition #2, and give the partition the label Ubuntu_SSD, just to make it easier to identify; and apply the change. Right-click on Partition #1 and select Manage Flags > boot,esp so that this partition is recognized as an EFI partition. Click Close to apply the change but don’t close gparted yet as it is still needed in the next step.

If you open a terminal and type:

```
sudo blkid
```

you will note that both the hard

drive Ubuntu partition (/dev/sda2 in my case) and the partition on the SSD (/dev/sdb2 in my case) have exactly the same UUID . This is a problem for GRUB as it typically will boot the first partition it finds with the UUID in its configuration file, generally the hard drive, resulting in a failure to boot from the SSD. Using gparted, select the SSD and right-click on the Ubuntu_SSD partition, select New UUID, and apply this change; now gparted can be closed. Open a terminal and type:

```
sudo blkid
```

again and you will see that the UUID for the Ubuntu system partition is unchanged BUT the Ubuntu_SSD partition now has a different UUID.

Now we need to format the EFI partition (/dev/sdb1 in my case) with a FAT32 filesystem. Open a terminal and type:

```
sudo mkfs.fat -v -F 32 -S 4096 -s 1 /dev/sdX1
```

(change X to an appropriate value for your system where X = a, b, c ...), and after this completes successfully, you can close the Live

HOWTO - PORTABLE UEFI CLONE

USB, remove it when prompted to do so, and reboot your system normally.

At this point, I suggest that you right-click on the Desktop and at least temporarily change the background. Later on, this is an easy way for you to know you booted from the SSD (which will have the old background) rather than the system on the hard drive which has the new one. Also open a terminal and type:

```
sudo rmdir /00_CLONE
```

which puts your base system back the way it was before we started; but, leaves a 00_CLONE marker in

the root directory of the SSD. This marker provides a good way to ensure that we don't mix up our locations between the hard drive and the SSD clone and edit the wrong system files.

ADJUSTING UUIDs TO CORRECT VALUES

The next thing to do is to change the UUIDs in two system files on the SSD to match their new values so that GRUB finds the SSD system rather than the system on the hard drive that we cloned. (Note: Remember, all of these UUIDs will be different on your system so use the ones displayed in

```
File Edit View Search Terminal Help
fsck.fat 4.1 (2017-01-24)
Checking we can access the last sector of the filesystem
Warning: Filesystem is FAT32 according to fat_length and fat32_length fields,
but has only 15992 clusters, less than the required minimum of 65525.
This may lead to problems on some systems.
Boot sector contents:
System ID "mkfs.fat"
Media byte 0xf8 (hard disk)
4096 bytes per logical sector
32768 bytes per cluster
32 reserved sectors
First FAT starts at byte 131072 (sector 32)
2 FATs, 32 bit entries
65536 bytes per FAT (= 16 sectors)
Root directory start at cluster 2 (arbitrary size)
Data area starts at byte 262144 (sector 64)
15992 data clusters (524025856 bytes)
32 sectors/track, 64 heads
2048 hidden sectors
128000 sectors total
Checking for unused clusters.
Checking free cluster summary.
/dev/sdb1: 0 files, 1/15992 clusters
eric@eric-Aspire-A115-31:~$
```

```
File Edit View Search Tools Documents Help
Open Save Undo
test.cfg x
1 search.fs_uuid f455f0f4-4e5f-493e-80e2-ab7801293fc6 root hd1,msdos2
2 set prefix=($root)'/boot/grub'
3 configfile $prefix/grub.cfg
Plain Text Tab Width: 4 Ln 1, Col 1 INS
```

your terminal window rather than the ones displayed here). The two files that require adjustment are: /etc/fstab and /boot/grub/grub.cfg. Open a terminal and type:

```
sudo blkid
```

to bring up the UUIDs of all the partitions on your system once again, then open the File Manager and click on Ubuntu_SSD. (bottom left)

You should see the folder 00_CLONE and the address bar showing Ubuntu_SSD mounted at /media since it is an external USB device, otherwise you are in the wrong location. Remedy this immediately, you do NOT want to edit the fstab file of your base system! Navigate to /etc so you can Edit as Administrator the file /etc/fstab. Copy and paste the UUID for Ubuntu_SSD into this file and delete the previous UUID entry

(line 9). You will also need to edit the entry like the one at line 14, with the UUID for the EFI partition so that it gets mounted when Ubuntu_SSD boots (above). Save the file and exit after making these changes.

Next, use the up-arrow of File Manager to move back up the directory structure to navigate to /boot/grub, and Edit as Administrator the file /boot/grub/grub.cfg. Find the old UUID (the one for your hard drive) somewhere in the file, and highlight it. Select Search, and this highlighted value will be in the "Search for" box. Paste the UUID for Ubuntu_SSD from the terminal into the "Replace with" box, and select "Replace All (next page, top right). Select Close, then Save this file and exit.

INSTALLING BOOTLOADERS

HOWTO - PORTABLE UEFI CLONE

Although there is a complete Ubuntu installation on the SSD, it is not yet directly bootable; however, it is safest to install boot loaders from a working system. As this step is crucial to the process, I am providing two different methods of booting into your cloned system in the unlikely event that one or the other does not work. This way, the appropriate bootloaders can be installed from the SSD in a working state.

METHOD #1 (PREFERRED):

There is an easy “trick” you can use to boot your newly created Ubuntu_SSD system without a bootloader installed. Simply open a terminal and type:

```
sudo update-grub
```

When you do this, GRUB should find the Ubuntu_SSD installation on /dev/sdX2 (where /dev/sdX2 is the device name for your Ubuntu_SSD partition), and add it to the GRUB boot menu. If update-grub does not find Ubuntu_SSD on /dev/sdX2, then use Method #2. Otherwise reboot your system and use the down-arrow to select the new entry corresponding to your

Ubuntu_SSD installation and boot into the cloned system – you will know you were successful as long as the old background appears.

METHOD #2 (FALLBACK):

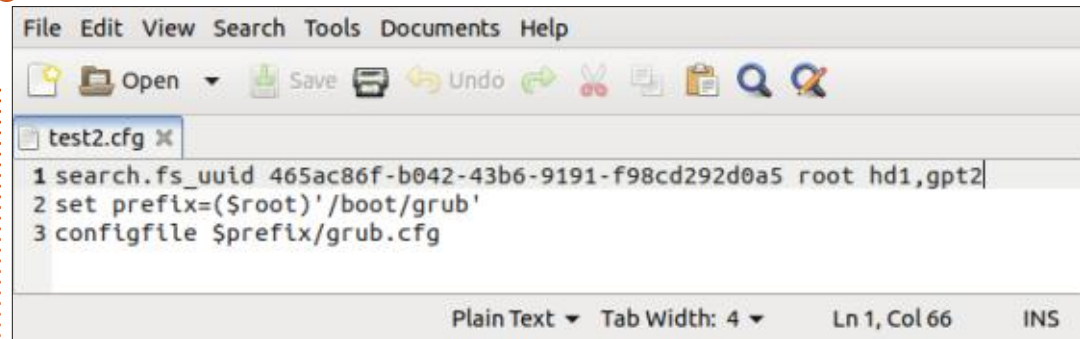
Reboot your system normally and when the GRUB menu appears, press the “c” key immediately to get a grub > prompt. If you don’t normally get a GRUB menu when you boot, then press the ESC key repeatedly as soon as you reboot and the GRUB menu should appear, then press “c” immediately. Type:

```
ls
```

and you will get a list of all the devices that GRUB recognizes, for example: (hd0), (hd0,gpt1), (hd0,gpt2), (hd1), (hd1,gpt1), and so on. You need to find which one of these is the location of Ubuntu_SSD. Because it was installed on the second partition, just check each drive’s second partition until you find the right one. Type:

```
ls (hd0,2) /
```

If you see the folder 00_CLONE, you’re done; if not, type ls (hd1,2)/ then ls (hd2,2)/ ... until you find it.



```
File Edit View Search Tools Documents Help
test2.cfg
1 search.fs_uuid 465ac86f-b042-43b6-9191-f98cd292d0a5 root hd1,gpt2
2 set prefix=( $root )'/boot/grub'
3 configfile $prefix/grub.cfg
Plain Text Tab Width: 4 Ln 1, Col 66 INS
```

Now type each of the following commands, one at a time, and press ENTER after each command. If you don’t get an error message, then they have executed correctly. Replace X with the value you found for the Ubuntu_SSD partition in the previous step.

```
set prefix=(hdX,2) /boot/grub
```

```
set root=(hdX,2)
```

```
insmod normal
```

```
normal
```

The computer should now boot and display a rather unusual GRUB menu which consists of two typical GRUB menus stacked one after the other. These are the menus from the base system (the top one) and the SSD system (the second one). Simply use the down-arrow to select the “Ubuntu” entry in the second GRUB menu and the computer should boot into the cloned system – once again the old

background tells you that you have successfully booted from the SSD.

Open a terminal and type:

```
df
```

and check the device name (/dev/sdX2) mounted at the root (/) as drive names sometimes change after a reboot. There should also be a device (/dev/sdX1) mounted at /boot/efi (if there isn’t, that will get addressed in a moment). Open the File Manager and check that 00_CLONE is present in the root filesystem, then Open as Administrator the /boot folder of your Ubuntu_SSD system. There should be a folder called efi; if there isn’t, right-click to create a new folder named efi. This ensures that there is a mount point of /boot/efi for the EFI partition as required. The EFI partition ought to have been mounted here by fstab at boot time, but just to err on the

HOWTO - PORTABLE UEFI CLONE

side of caution, let's unmount and remount it to be sure. Type:

```
sudo umount /boot/efi
```

and then mount the EFI partition from the SSD with:

```
sudo mount /dev/sdX1 /boot/efi
```

(where /dev/sdX1 is the device name for your EFI partition) so that bootloader files can be written to that partition.

The first thing to check before doing anything else is that all of the appropriate grub packages are installed on your SSD. To do this,

open Synaptic, select Status > Installed, and scroll down to grub entries. There are 6 things to look for (below). Depending on how your system is configured, these may or may not be installed but they all need to be there to proceed.

If any are missing, select All and scroll down to the grub packages and install it/them. If you do one at a time, others may get installed automatically in the event several are missing. If Synaptic is not on your system (it is no longer installed on newer Ubuntu distros by default), install it with:

```
sudo apt-get install synaptic
```

However, if you have another preferred method for checking installed packages and installing any missing ones, you can use that instead. Once the 6 grub packages are all installed, open a terminal and type:

```
sudo apt-get install --reinstall shim-signed
```

You may be asked to confirm where you want to install the bootloader files and this is /dev/sdX1 (the EFI partition we created at the start). If you are presented with a graphical screen with several choices, use the space-bar to toggle the asterisk indicating your choice, the arrow keys to navigate; and the ENTER key when you are ready to proceed.

This particular method actually installs a series of bootloader files, including those required for booting with secure boot enabled. If you Open as Administrator the folder /boot/efi and then double-click on EFI, you should see 2 folders, BOOT and ubuntu. These folders contain the files needed to boot Ubuntu (ubuntu) and also a "fallback" option (BOOT) in case

something doesn't work properly.

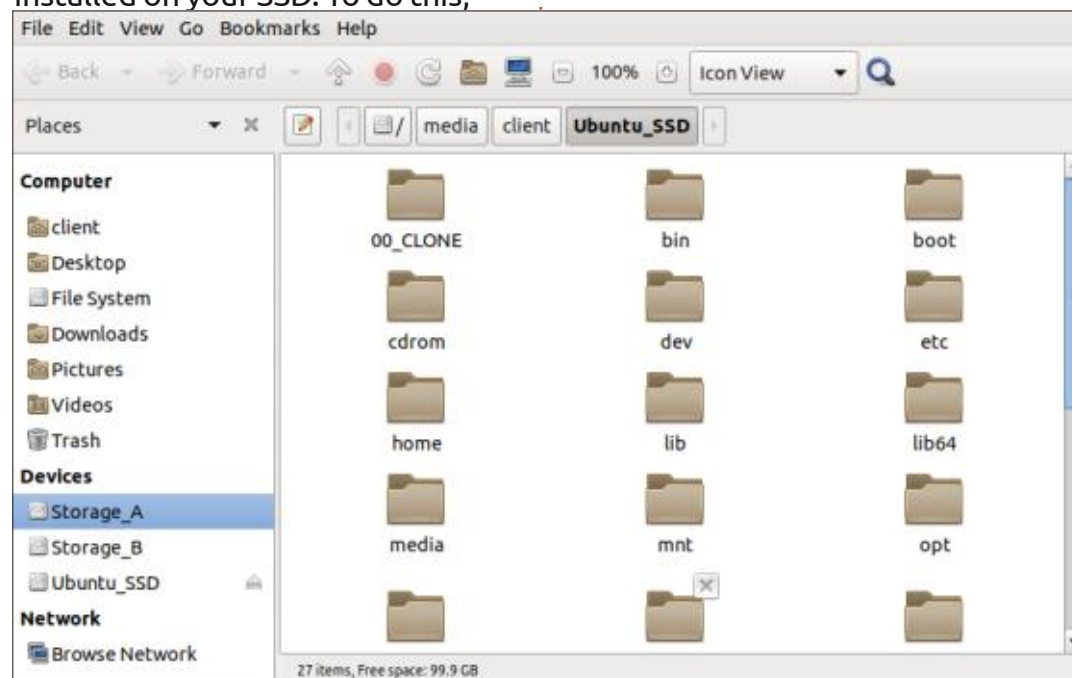
Your clone Ubuntu_SSD is now a complete, portable system. Reboot your computer and press the F12 key (or whatever key you normally use) to bring up the boot menu. Select the USB SSD device and you should boot into Ubuntu with the old background screen. Open a terminal and type:

```
df
```

and you should see both the Ubuntu_SSD partition mounted as root (/) and the EFI partition mounted on /boot/efi; if you don't, go back and double-check the UUIDs in /etc/fstab and edit as required. As your final step type:

```
sudo update-grub
```

to ensure that the GRUB configuration file is correctly updated. If you plan to use this SSD clone in a semi-permanent way, I suggest you modify the boot order settings in the UEFI firmware to boot from USB first. This way, the computer will always boot from the USB SSD if it's plugged in, and you can always choose to boot to the hard drive by selecting the appropriate option from the GRUB



menu that will be displayed at boot time.

I have successfully booted this SSD drive on both of my laptops that support UEFI booting (Acer and Dell). It is impossible to guarantee that it will perform correctly on every system; but, hopefully it works for you!

TECHNICAL NOTE #1

I originally used gparted to format the EFI partition to a FAT32 filesystem and although I did not receive any error messages, the resulting system would not boot! Interestingly, using gparted to check the EFI partition does produce an error message saying that "Filesystem is bigger than its volume!", but there is really no reason to do that when there is no indication anything is wrong. After seeing this cryptic message, I used the terminal command:

```
sudo fsck.fat -v -n /dev/sdb1
```

to check the filesystem on the EFI partition to try to get more detailed information. The resulting details (Figure 11), along with some digging into the FAT32 specification, explain the problem.

A valid FAT32 partition must contain a minimum of 65,525 clusters, where a cluster is a whole number (1, 2, 4, 8, ... 128) multiple of the sector size. The sector size of this SSD is 4096 and the program that gparted calls to do the formatting (mkfs.fat) chooses to use a multiple of 8 for a cluster size of $8 \times 4096 = 32,768$ bytes. The minimum size for a valid FAT32 partition with this cluster size would be $65,525 \times 32,768 = 2,147,123,200$ bytes (~ 2.1 GB), far bigger than our 500MB partition. I suspect that mkfs.fat uses this multiple because with a sector size of 512, a multiple of 8 produces a 4096-byte cluster, which is the recommended size for partitions between 256MB and 2 GB; however, it seems that gparted doesn't check sector size before calling mkfs.fat with its default values. Unfortunately, the UEFI firmware checks the number of clusters to decide if there is a valid EFI partition or not, and because there are not 65,525 clusters, it won't recognize the partition or boot from it. The workaround is to use the terminal command:

```
sudo mkfs.fat -v -F 32 -S  
4096 -s 1 /dev/sdX1
```

where the -s 1 option specifies a multiple of 1. A multiple of 1 produces a cluster size of $1 \times 4096 = 4096$, which requires only $4096 \times 65,525 = 268,390,400$ bytes (~ 268MB), well within the 500 MB size of the EFI partition. Problem solved.

TECHNICAL NOTE #2

If you are using a device with 512-byte sectors, just use gparted to format the EFI partition to FAT32 rather than using the terminal command. Everything else stays the same.



Eric Wood is 72, retired, and lives in London, Canada. About 14 years ago he read a newspaper article profiling Mark Shuttleworth which motivated him to install Hardy Heron (Ubuntu 8.04 LTS) on his computer. The rest, as they say, is history. Email: eric@linuxmail.org

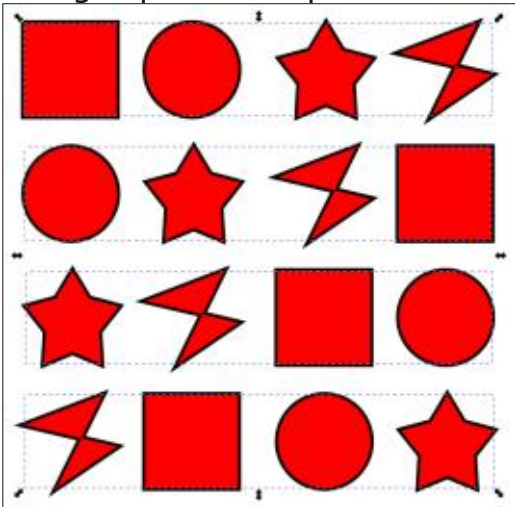


HOW-TO

Written by Mark Crutch

Last time, I indulged in a whistle-stop tour of CSS support in SVG files, in preparation for this month's topic: the Selectors and CSS dialog. As I noted previously, this dialog first appeared as a hidden option in Inkscape version 1.0, and was then officially exposed in version 1.0.1. It can be opened using the Ctrl-Shift-Q keyboard shortcut (even on v1.0), with later releases also exposing it via the Object menu. In my experience, it's still a little buggy, even in version 1.1, and can lead to full application crashes, so please make sure to save regularly if you decide to use it.

To describe the operation of this dialog requires a sample document



on which to work – preferably one with a mixture of elements to target via CSS selectors. For the purposes of this article, therefore, I've created a collection of sixteen elements (four squares, four circles, four stars, and four Bézier paths), arranged as four rows, with the content of each row being grouped.

The style of each object is the same, and that information is stored in the element's "style" property, as Inkscape does by default. Looking at the first row, therefore, the structure of the SVG content boils down to something like that shown top right.

As usual, I've omitted a lot of the SVG content for clarity, including additional style properties and the namespaces of most of the elements and attributes. Note the first path, however, where I have specifically included the `sodipodi:type` attribute which tells Inkscape that this is a star primitive. The Bézier path, on the other hand, does not have such an attribute, as that is just a standard SVG path element

Inkscape - Part 112

```
<svg>
  <g>
    <rect id="rect31"
      style="fill:#ff0000;stroke:#000000;..." />
    <circle id="circle1145"
      style="fill:#ff0000;stroke:#000000;..." />
    <path id="path1243" sodipodi:type="star"
      style="fill:#ff0000;stroke:#000000;..." />
    <path id="path1253"
      style="fill:#ff0000;stroke:#000000;..." />
  </g>
  ...
```

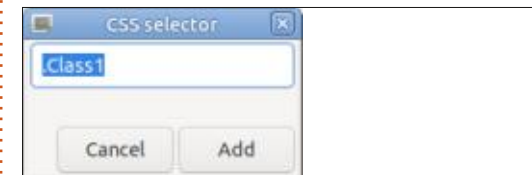
and doesn't require additional hints for Inkscape to understand how to work with it. The IDs are just the arbitrary values assigned by Inkscape – in a real file you might want to edit them to be more descriptive or user-friendly.

Now it's time to open the Selectors and CSS dialog (hereafter referred to as the Selectors dialog, for brevity), via the Object > Selectors and CSS... menu entry.



With nothing selected on the page, be prepared for something of a disappointment, as it hardly screams functionality at this point.

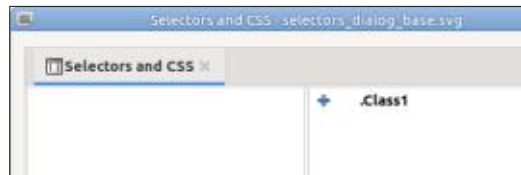
The buttons in the bottom-right corner can be used to switch between horizontal and vertical orientation – though in both cases, in my opinion, the panels are presented in the wrong order. The only other interactive elements at this stage are the plus and minus buttons in the bottom-right corner.



The latter does nothing right now (and should probably be disabled), leaving us with little to do but press

the plus (+) button. This will open a small “CSS Selector” dialog, pre-filled with a class name (including the preceding dot, as required in CSS syntax).

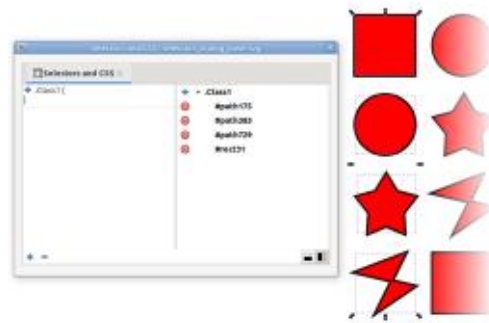
Let’s just run with this for now, accepting the default selector value by clicking the Add button. Brace yourself for the overwhelming complexity of the change it makes to the main dialog.



When you’ve fully recovered from the excitement, you might want to take a moment to really appreciate what has happened: there’s now an entry in the right-hand panel labelled “.Class1”, and with another plus button next to it! You can select the new row, but double-clicking won’t let you change the value – there’s no way to edit a selector once it’s been added, so if you make a mistake your only recourse is to delete it and start again. Speaking of deleting it, our minus button now has a purpose: with the new entry selected, clicking the button will delete the entire entry. And what of our new entry-specific plus

button? Clicking on it at this stage does absolutely nothing. There’s not even a tooltip to suggest what it is meant to do.

The purpose of this button is to add the class name to any selected SVG elements, causing them to match the CSS selector and appear in the dialog. Let’s look at a practical example by selecting the first element from each row. Remember that each row is a separate group, so we have to hold Ctrl+Shift to select an object within the group (Ctrl) and add to the existing selection (Shift). With those keys held, it’s a simple task to click on the first object in each row, giving us a selection of four items. Clicking on the plus button now will add the “Class1” class to each of the elements, and the Selectors dialog updates to show us the IDs of the elements that match the selector.



In the XML code those elements

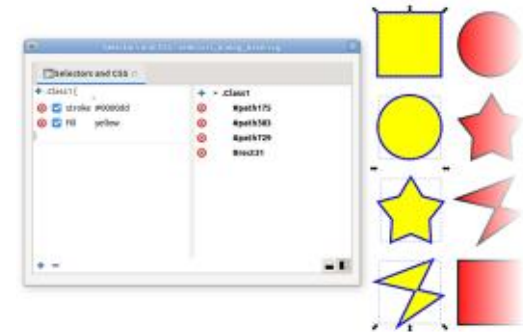
now look something like this:

```
<rect class="Class1" ... />
```

Note that Inkscape gives <circle> elements an ID that begins with “path”, so the three path and one rect IDs listed actually represent two paths (the star and the Bézier path), a circle and a square. It’s a little confusing at first, but just remember that an ID is just a unique label, and doesn’t have to relate to the type of object. Clicking on a single ID in the dialog will select the associated object on the canvas, so it’s pretty easy to keep track of which elements have which IDs. For now, we’ll assume the CSS selector itself (“Class1”) is selected, per the previous image. You’ll notice that the left-hand pane has now gained a little content – and a plus button of its own.

The left pane shows the CSS properties that apply to the currently selected elements, in this case reflecting the stylesheet that Inkscape has created in the head of the document. The plus button lets us add more properties. The UI is a little clunky, but when you click the button, a new blank entry will be created with the property name field focused, ready for you to type

into. Put in the property name, then press Enter or Tab to move to the value field, where you can type a suitable value for your property. Here, for example, is what happens to our selection when I set a couple of CSS colors, one for the stroke and another for the fill.



Each property has a button, which can be used to remove it completely, and a checkbox that can be used to toggle it on and off. But these don’t necessarily work the way you might expect. In this example, you might think that turning off (or deleting) the fill property would revert the objects back to their previous red fill, but that’s not the case at all. Instead the fill changes to black.

What’s going on here? Remember from last month that CSS properties in a “style” attribute override those from the stylesheet.



But our elements all had their fill and stroke set via style attributes when we created them, so how did the yellow fill (which comes from the stylesheet) ever work in the first place? The answer is that Inkscape automatically deletes conflicting properties from the style attribute when you start adding them via the Selectors dialog.

In this case, it means that the red fill from the style attribute was removed as soon as the yellow fill was added to the stylesheet. Turn that entry off, however, and Inkscape no longer has any idea what fill color to use. In that case the SVG spec is quite clear: the initial value for fill – the one that Inkscape falls back to – is black. The spec also defines the initial value for stroke to be “none” - so disabling or deleting the stroke property actually results in the

whole stroke being removed, rather than a thick black stroke remaining.

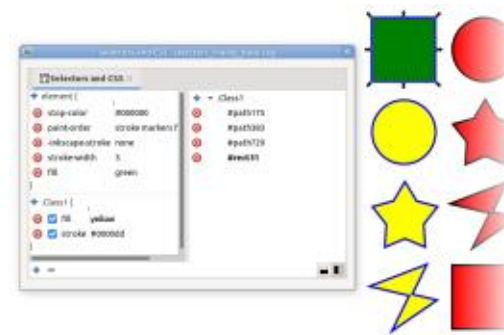
Side effects like this mean that working with the Selectors dialog can be a little tricky if you’re not careful, or don’t have a thorough understanding of the SVG and CSS rules. It’s easy to assume that you can add a fill color, then just delete it to revert your change if you want, but, as this example demonstrates, the act of adding a rule can make a change to your XML content in a way that won’t be reverted when you remove the rule.

With both rules re-enabled, let’s take a look at the left-hand pane when only a single ID entry is selected in the right pane.



The left pane now shows not only the rules that are applied due to the new class that was added, but also those that are defined in

the style attribute on the object itself in a section labelled “element”. You can edit existing values, or add new ones via this part of the dialog. If we set the fill color on the element itself, you’ll also note that the value supplied by the class – the one from the stylesheet – acquires a strike-through to indicate that the property has been overridden by another one.



Hopefully you can now see why I think these panes are in the wrong order: you first have to select an item in the right-hand pane in order to populate the content in the left one, whereas conventional left-to-right UI design (for an LTR based language) would suggest the pane in which you perform the action should be to the left of the one which reacts to that action.

As well as buttons to delete

individual properties, you’ve no doubt noticed that there are delete buttons next to the IDs in the right hand pane. Clicking one of these will remove the class name from that element’s “class” property, removing it from the dialog, and removing any class rules that apply to it. Once again, however, any conflicting rules that were previously in the “style” attribute are long since gone, so you’re likely to end up with a black fill and no stroke once more.

Next time, we’ll add a few more items to our selection, look at how best to use this dialog as a replacement for the old “Selection Sets” feature, and begin to explore some of the more varied CSS selectors that can be used in this dialog – albeit with some pretty big caveats!



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

THE DAILY WADDLE

I THOUGHT YOU SAID YOU
WERE GOING TO DOWNLOAD A
WHITE PAPER?



TECH SPEAK FOR GOING
TO THE LOO...





Richard 'Flash' Adams spent about 20 years in corporate IT. He lives in rural northwest Georgia, USA, with his adopted 'son', a cockatiel named Baby who now has a little brother, a dusky-headed conure named Skittles. Feedback welcome at: acer11kubuntu@gmail.com





This month, we will continue playing with the SSD1302 OLED display. We've seen how to simply display text using the default font and how to use other fonts through the micropython-font-to-py library package.

Let's jump right in to some new things that we can do.

SIMPLE GRAPHICS

NOTE: The code presented here was developed using the ESP32/ESP8266. For the most part, the same code runs on the RPi Pico with a few changes in the import and I2C sections.

In order to do simple graphics like lines, circles and so on, you need to download a graphics driver for the SSD1302. You can get it at <https://github.com/adafruit/micropython-adafruit-gfx/blob/master/gfx.py>. Be sure to copy it to your microcontroller device.

I was able to gain a tremendous amount of information on using the SSD1302 from the web. One of the

most useful websites was the Random Nerds Tutorials site. Their page for this section is <https://randomnerdtutorials.com/micropython-ssd1306-oled-scroll-shapes-esp32-esp8266/>. This page also discusses how to do display scrolling, which we'll discuss shortly.

We'll start (right) with the normal import and I2C setup code... This is for the ESP32/ESP8266.

Now the necessary preliminaries are out of the way, we can concentrate on how to draw our graphics.

SIMPLE LINE

We'll start with drawing a line from position 0,0 to position 128, bottom line of the display. If you are using a 128x64 OLED, that (of course) would be 64, but if you are using a 128x32, then you would need to use 32. The function call parameters for the line function is as follows:

```
from machine import Pin, SoftI2C
import ssd1306
from time import sleep
import gfx
```

```
# Be sure to set the pin numbers for your configuration
i2c = SoftI2C(scl=Pin(18), sda=Pin(19))
```

For the RPi Pico, I used GP8 and GP9 (physical pins 11 and 12) for the connection to the I2C bus. The code for the Pico will be...

```
from machine import Pin, I2C
from ssd1306 import SSD1306_I2C
import gfx
from time import sleep
i2c=I2C(0)
```

From here the code for all three microcontrollers will be the same.

```
# Be sure to set the width and height for your OLED device
oled_width = 128
oled_height = 64
# oled_height = 32
```

```
oled = ssd1306.SSD1306_I2C(oled_width, oled_height, i2c)
graphics = gfx.GFX(oled_width, oled_height, oled.pixel)
```

```
# Clear the OLED by setting all the pixels to black then
calling the show routine
oled.fill(0)
oled.show()
```

```
line(x0, y0, x1, y1, color)
```

So we would code it as follows...

```
graphics.line(0, 0, 127,
oled_height, 1)
```

```
oled.show()
```

By using `oled_height` as our `y1` parameter, we can ensure that this will work for both 128x64 and 128x32 displays. Now, sleep for 2 seconds, then clear the display and we will move on to the next demo.


```
sleep(2)
```

```
oled.fill(0)
```

RECTANGLE

Next, we will draw a rectangle. The parameters for the rectangle function are:

```
rect(x0, y0, width, height, color)
```

We will draw a rectangle from 0,0 to 50,20. This way, it will work on either of the display devices. Once we show the rectangle, then, like above, we'll sleep for 2 seconds and clear the display. So our code would be...

```
graphics.rect(0, 0, 50, 20, 1)
```

```
oled.show()
```

```
sleep(2)
```

```
oled.fill(0)
```

FILLED RECTANGLE

To create a filled rectangle we'll use a very similar function `fill_rect` with the same parameters as before.

```
graphics.fill_rect(0, 0, 50,
```

```
20, 1)
```

```
oled.show()
```

```
sleep(2)
```

```
oled.fill(0)
```

CIRCLES

Circles are just as easy as rectangles. The functions are `circle` and `fill_circle`. They both use the same parameter list.

```
circle(x0, y0, radius, color)
```

```
fill_circle(x0, y0, radius, color)
```

Again, we'll use parameters that will work on either of the two OLED displays.

```
# Circle
(x0,y0,radius,colour)
```

```
graphics.circle(64, 10, 10, 1)
```

```
oled.show()
```

```
sleep(2)
```

```
oled.fill(0)
```

```
# Filled Circle
```

```
graphics.fill_circle(64, 10, 10, 1)
```

```
oled.show()
```

```
sleep(2)
```

```
oled.fill(0)
```

TRIANGLES

The triangle functions are similar to the `rect` and `circle` functions, but have a third set of coordinates.

```
triangle(x0, y0, x1, y1, x2, y2, color)
```

```
fill_triangle(x0, y0, x1, y1, x2, y2, color)
```

As with the last functions, we'll use coordinates that will fit either size display.

```
graphics.triangle(0, 0, 55, 20, 5, 32, 1)
```

```
oled.show()
```

```
sleep(2)
```

```
oled.fill(0)
```

```
oled.show()
```

```
# Filled Triangle
```

```
graphics.fill_triangle(0, 0, 55, 20, 5, 32, 1)
```

```
oled.show()
```

```
sleep(2)
```

```
oled.fill(0)
```

```
oled.show()
```

Easy enough, right?

The file on the repository for this section is called `rnerd_ssd1306_esp32_graphics1.py` for the ESP32/ESP8266 and `pico_oled_graphics2.py` for the Pico.

DISPLAY SCROLLING

Sometimes, you want to make something nicer than a static display where the text simply overwrites itself. Having the text scroll in from the side or top and pause a few seconds, then scroll off the screen, gives your project a certain "WOW" factor. These days, we need a "WOW" factor to make our projects stand out.

I originally tested this code on the ESP32, but I was able to get it to run on the RPi Pico. The only thing you have to make sure of is the I2C setup. Between the information from last month and the information in the code above, you should have no problems getting things to work. Just in case you have forgotten, I got this demo from Random Nerds Tutorials web

site. You can find the link in the text above.

GETTING STARTED

As I do most of the time, we'll start (top right) with the import section and, in this case, the I2C setup. As I said, if you were able to get the code above to work you can get this to work.

Now that we have the text of the "screens" set up, we need to create a list of lists (middle right) that we will pass into the functions that we will be creating. Each entry in the list is set up as X (column), Y (row) and message. In the above code, we created three messages as "screen1", two messages as "screen2" and 1 message as "screen3". So, we just need to set up where we want each of the messages to show up. Each list shows up as a complete "screen".

At this point (bottom right), we can create our first support function. This one is called `scroll_in_screen` and will scroll the screen horizontally from left to right. Once everything has been passed into the display, the function is finished and you can call

```
from machine import Pin, I2C
import ssd1306
from time import sleep

# Setup I2C Bus(s)
i2c = I2C(0)
oled_width = 128
oled_height = 64
oled = ssd1306.SSD1306_I2C(oled_width, oled_height, i2c)
```

At this point, let's set up a few simple lines of text that will embody our "screens" that will be scrolled.

```
screen1_row1 = "Screen 1, row 1"
screen1_row2 = "Screen 1, row 2"
screen1_row3 = "Screen 1, row 3"

screen2_row1 = "Screen 2, row 1"
screen2_row2 = "Screen 2, row 2"

screen3_row1 = "Screen 3, row 1"
```

```
screen1 = [[0, 0 , screen1_row1], [0, 16, screen1_row2], [0, 32, screen1_row3]]
screen2 = [[0, 0 , screen2_row1], [0, 16, screen2_row2]]
screen3 = [[0, 40 , screen3_row1]]
```

```
def scroll_in_screen(screen):
    for i in range (0, oled_width+1, 4):
        for line in screen:
            oled.text(line[2], -oled_width+i, line[1])
        oled.show()
        if i!= oled_width:
            oled.fill(0)
```

The next function will take the data that is already on the screen and scroll it off the display towards the right side. This function has a speed parameter.

```
def scroll_out_screen(speed):
    for i in range ((oled_width+1)/speed):
        for j in range (oled_height):
            oled.pixel(i, j, 0)
        oled.scroll(speed,0)
        oled.show()
```

sleep for a period so the user can read the message.

Now that we have all of our support functions coded (final ones shown top right), we can start using them. Each demo portion is fairly long, so we'll just loop three times. The original code (next page, on the left) had this as a forever loop.

Once the demo is finished, clear the display.

```
# Clear the OLED
```

```
oled.fill(0)
```

```
oled.show()
```

Now that you have seen the functions that work from left to right and top to bottom, you might want to try to create functions that scroll from right to left and bottom to top on your own.

I've taken up all the space that I should, so that's all for this month. You can find the code for both projects (in both Pico and ESP formats) at my github repository at https://github.com/gregwa1953/FCM173_MicroThisMicroThat

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

Here is the scroll vertically from top to bottom, pausing when the screen is full.

```
def scroll_in_screen_v(screen):
    for i in range (0, (oled_height+1), 1):
        for line in screen:
            oled.text(line[2], line[0], -oled_height+i+line[1])
        oled.show()
        if i!= oled_height:
            oled.fill(0)
```

This is the function that will scroll the data off the bottom of the screen.

```
def scroll_out_screen_v(speed):
    for i in range ((oled_height+1)/speed):
        for j in range (oled_width):
            oled.pixel(j, i, 0)
        oled.scroll(0,speed)
        oled.show()
```

Finally, here is the continuous vertical scroll support function.

```
def scroll_screen_in_out_v(screen):
    for i in range (0, (oled_height*2+1), 1):
        for line in screen:
            oled.text(line[2], line[0], -oled_height+i+line[1])
        oled.show()
        if i!= oled_height:
            oled.fill(0)
```



```
for cnt in range(3):

    # Scroll in, stop, scroll out (horizontal)
    scroll_in_screen(screen1)
    sleep(2)
    scroll_out_screen(4)

    scroll_in_screen(screen2)
    sleep(2)
    scroll_out_screen(4)

    scroll_in_screen(screen3)
    sleep(2)
    scroll_out_screen(4)

    # Continuous horizontal scroll
    scroll_screen_in_out(screen1)
    scroll_screen_in_out(screen2)
    scroll_screen_in_out(screen3)

    # Scroll in, stop, scroll out (vertical)
    scroll_in_screen_v(screen1)
    sleep(2)
    scroll_out_screen_v(4)

    scroll_in_screen_v(screen2)
    sleep(2)
    scroll_out_screen_v(4)

    scroll_in_screen_v(screen3)
    sleep(2)
    scroll_out_screen_v(4)

    # Continuous vertical scroll
    scroll_screen_in_out_v(screen1)
    scroll_screen_in_out_v(screen2)
    scroll_screen_in_out_v(screen3)
```



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.



Linux on Your iPad

For as low as \$4.95, you can have your own personal Linux cloud computer in minutes on any device.





Ubuntu Touch is the privacy and freedom-respecting mobile operating system by UBports.

Today we are happy to announce the release of Ubuntu Touch OTA-19, our nineteenth stable update to the system! OTA-19 will become available for the following supported Ubuntu Touch devices over the next week:

BQ E4.5 Ubuntu Edition
BQ E5 HD Ubuntu Edition
BQ M10 (F)HD Ubuntu Edition
BQ U Plus
Cosmo Communicator
F(x)tec Pro1
Fairphone 2
Fairphone 3
Google Pixel 2XL
Google Pixel 3a
Huawei Nexus 6P
LG Nexus 4
LG Nexus 5
Meizu MX4 Ubuntu Edition
Meizu Pro 5 Ubuntu Edition
Nexus 7 2013 (Wi-Fi and LTE models)
OnePlus 2
OnePlus 3 and 3T
Oneplus 5 and 5T
OnePlus 6 and 6T

OnePlus One
Samsung Galaxy Note 4 (910F, 910P, 910T)
Samsung Galaxy S3 Neo+ (GT-I9301I)
Sony Xperia X
Sony Xperia X Compact
Sony Xperia X Performance
Sony Xperia XZ
Sony Xperia Z4 Tablet (LTE or Wi-fi only)
Vollaphone
Vollaphone X
Xiaomi Mi A2
Xiaomi Mi A3
Xiaomi Mi MIX 3
Xiaomi Poco F1
Xiaomi Redmi 3s/3x/3sp (land)
Xiaomi Redmi 4X
Xiaomi Redmi 7
Xiaomi Redmi Note 7
Xiaomi Redmi Note 7 Pro

The Pine64 PinePhone and PineTab are updated independently of the rest of these devices. The stable channel for the PinePhone and PineTab will not receive an update labeled "OTA-19".

WHAT'S NEW?

This release of Ubuntu Touch is still based on Ubuntu 16.04.

On the App framework side we had some minor improvements landed: 16.04.7 framework has been added. And the packages qml-module-qtwebview and libqt5webview5-dev have been added as well, allowing developers to wrap QtWebEngine. This was requested for application compatibility with other platforms that do not offer direct access to QtWebEngine.

Halium 7.1 and 5.1 devices have now access to gyroscope and magnetic field sensors. Also a rough implementation of a compass is available though its currently still very erratic. Improvements for this calculated sensors are welcome!

Note that Halium 9 and 10 devices use sensorfw instead of our legacy platform-api and therefore have already support for at least the gyroscope. For some reasons though magnetic field sensor is currently not correctly exposed. We will try to address this soon.

In the messaging app the keyboard will no longer pop up automatically, allowing a more focused way of reading incoming messages when one does not want to reply immediately.

BUGS AND ISSUES FIXED

As we went for the messaging app's auto-popup of the keyboard we also fixed a few other annoyances around the messaging app and it's keyboard handling, which would in fact prevent popping up the keyboard when it was needed. Seems the messaging app was not too eager about writing messages.

The WiFi negotiation should now prevent unnecessary password dialogs if the connection cannot be established immediately. This reduces the annoying pop-up and also creation of multiple entries labeled (1) (2) etc for the same SSID.

Let's talk about audio bugs and media hub: First we fixed a

situation that prevented to put music on pause when the headphone cable has been removed and rather continued playback through the device's main speaker, quite annoying.

Then we fixed a bug in media-hub which put the device to sleep after the first piece of music was played, resulting in a very choppy and broken playback of all music pieces thereafter. Also the display went dark when playing remote media that contained video information only, since media-hub did believe its audio only.

Finally we fixed the most critical media-hub bug so far: Preventing the device from sleep when 2 pieces of audio were played in rapid succession, probably also when interleaved with music and system sounds, or whatever combination of triggers there could be. Media-hub would not clear all requested wake locks properly, resulting of a device that consumed the battery very quickly. Sorry for that one!

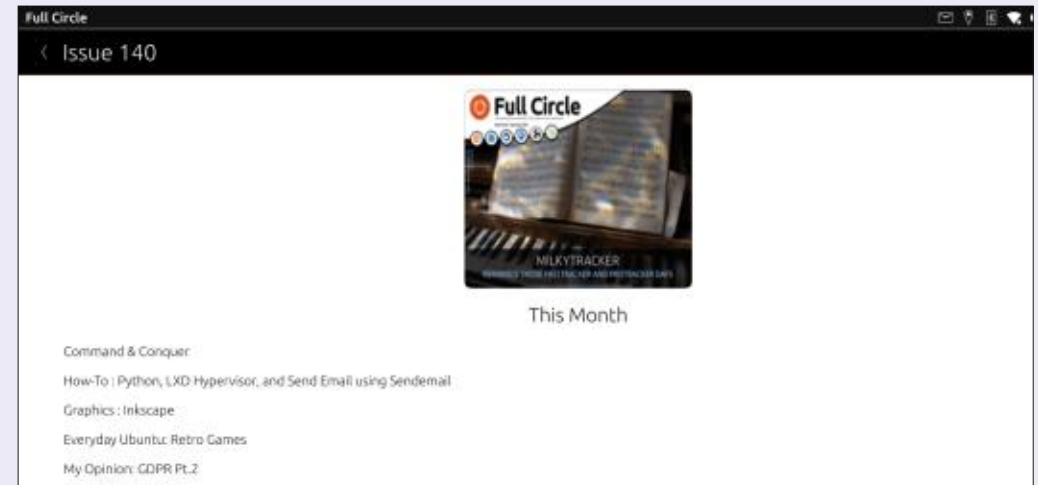
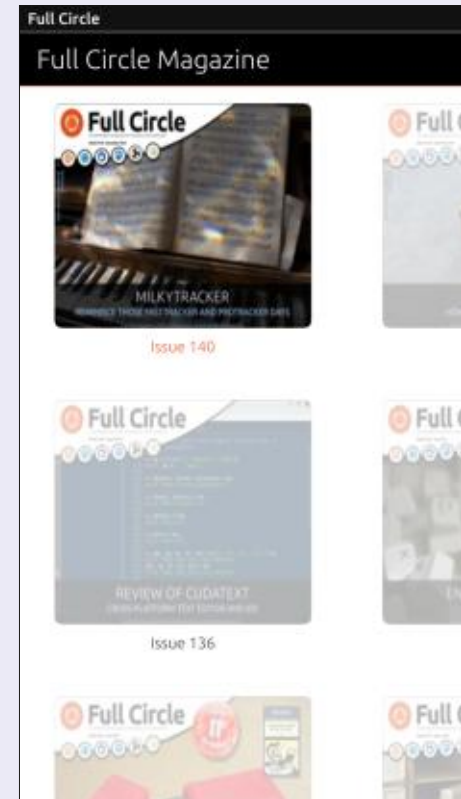
Camera and screen shot could not play the intended sound effect. We found out that this effect was indeed coming from inside the Android container and replaced it

with a better sound that resembles more the sound of a real camera. We hope you like it!

Pixel 3a got some important fixes: Shut down does not hang the device anymore, resulting in full discharge of the battery, and also the proximity sensor is working now correctly during calls. Also video recording had troubles with capturing sound correctly in some situations, resulting in a frozen camera app. That could also fix other devices with the same problem.



THE FULL CIRCLE APP FOR UBUNTU TOUCH - UPDATED!



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

INSTALL

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

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

HUGE thanks to Brian for this.

The Daily Waddle

ISN'T IT STRANGE THAT COMPUTER VIRUSES NEVER RUN OUT OF MEMORY, NO MATTER HOW MANY YOU HAVE?





MY OPINION

Written by ...

NOTHING TO SEE HERE.

Submit your stories and opinions to:

ronnie@fullcirclemagazine.org.



HOW-TO

Written by Ronnie Tucker

Write For Full Circle Magazine

GUIDELINES

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

RULES

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

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

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

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

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

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

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

When you are ready to submit your article please email it to: articles@fullcirclemagazine.org

TRANSLATIONS

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

REVIEWS

GAMES/APPLICATIONS

When reviewing games/applications please state clearly:

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

HARDWARE

When reviewing hardware please state clearly:

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

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





REVIEW

Written by Ronnie Tucker

Linux Lite 5.4

My default Linux install these days is, of course, Ubuntu. But on my old laptop, even good ol' Ubuntu was feeling a bit sluggish. I decided to give Linux Lite a try. I'd seen it mentioned on pretty much every list of so-called lightweight distros.

INSTALL

Like most Linux distros, I used a USB stick to install Linux Lite (version 5.4 as I write this review). Before installing Linux Lite (LL hereafter), I did a live boot to make sure everything worked. The

installer for LL is the exact same as you'll see in Ubuntu. I chose to completely erase the entire drive (removing Ubuntu) and install LL.

FIRST BOOT

First thing I did with LL was to load up the Task Manager (bottom right) to see what resources LL would use. Before removing Ubuntu, I ran its task manager (bottom left) to see what it was doing. You'll see the images within this article, but, in short, the Ubuntu resources were showing CPU1 using 25% and CPU2 using

18% and using 1GB (out of 4GB) of RAM. LL shows it using CPU (overall) of 5% and 20% of RAM (so, same as Ubuntu, 1GB). So far so good!

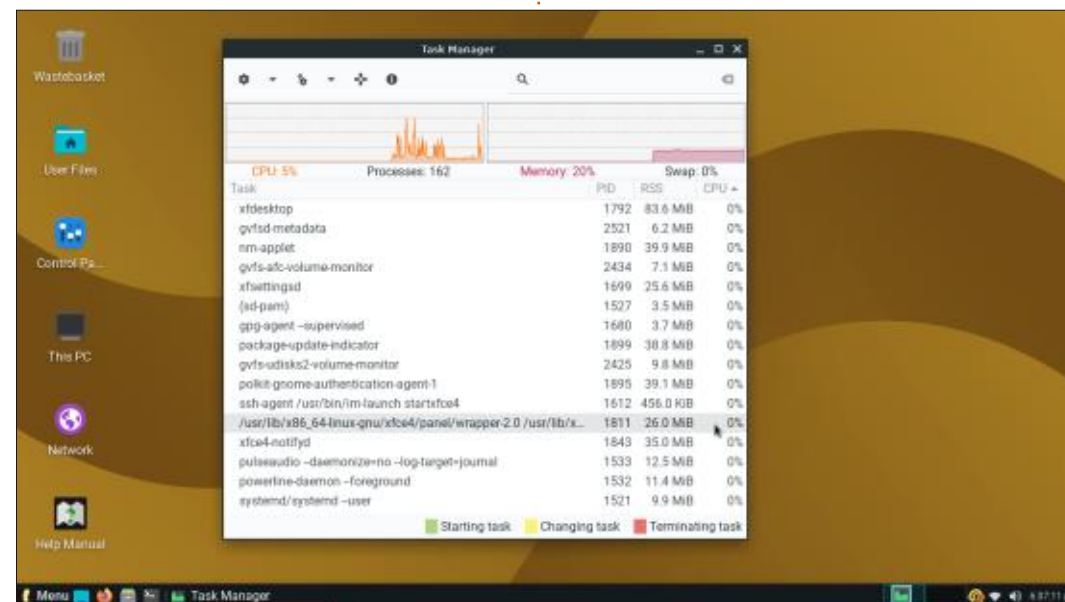
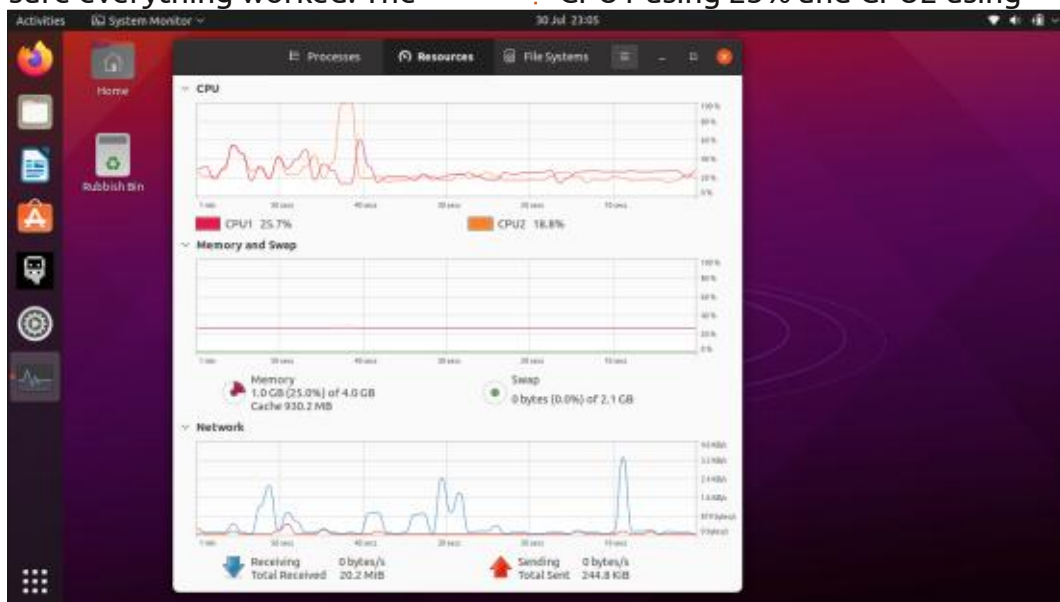
The first thing I notice about LL is the clean windows (Thunar) and the old familiar bottom task bar with ye olde 'Start'-style (labelled Menu here) button.

The Menu button reveals all the usual things you'd expect like access to the device and all the installed apps, and with two ways to access the Settings; either the

icon at the bottom which will open a Settings window, or via the Settings option in the Menu button which shows all the items that are available from within the Settings window. Nice for quick access to a particular item in the Settings.

Beside the Menu button are shortcuts to Firefox, Files, and Terminal. On the far right of the task bar are the virtual desktops, a quick link to check for updates/upgrades, networking, sound, and the time.

First impressions are good. It's



REVIEW

light and fresh. Especially compared to the dark and dull Ubuntu.

SOFTWARE

Taken from the LL website:

- Web Browser - Firefox 87.0
- Email Client - Thunderbird 78.7.1
- Office Suite - LibreOffice 6.4.6.2
- Media Player - VLC 3.0.9.2
- Image Editor - Gimp 2.10.18
- System Backup and Restore - Timeshift 20.03
- File Manager - Thunar 1.8.14
- Base: 20.04.2
- Kernel: 5.4.0-70 (custom kernels are also available via our Repository for versions 3.13 - 5.11)

Series: 5.x

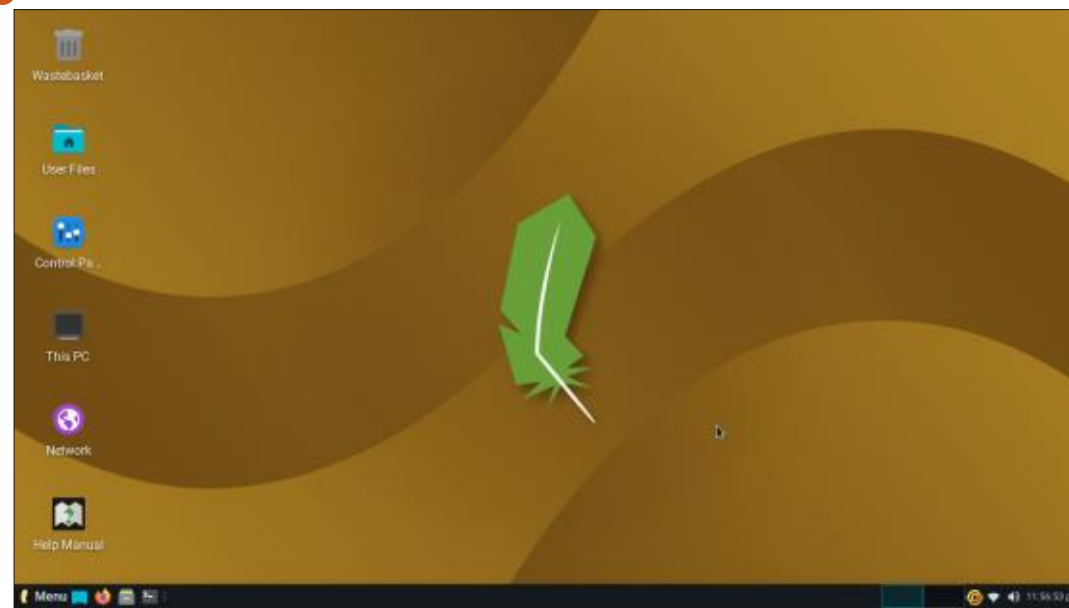
Desktop UI [XFCE]

- Window Theme: Adapta
- Icon Theme: Papirus
- Font: Roboto Regular

Settings

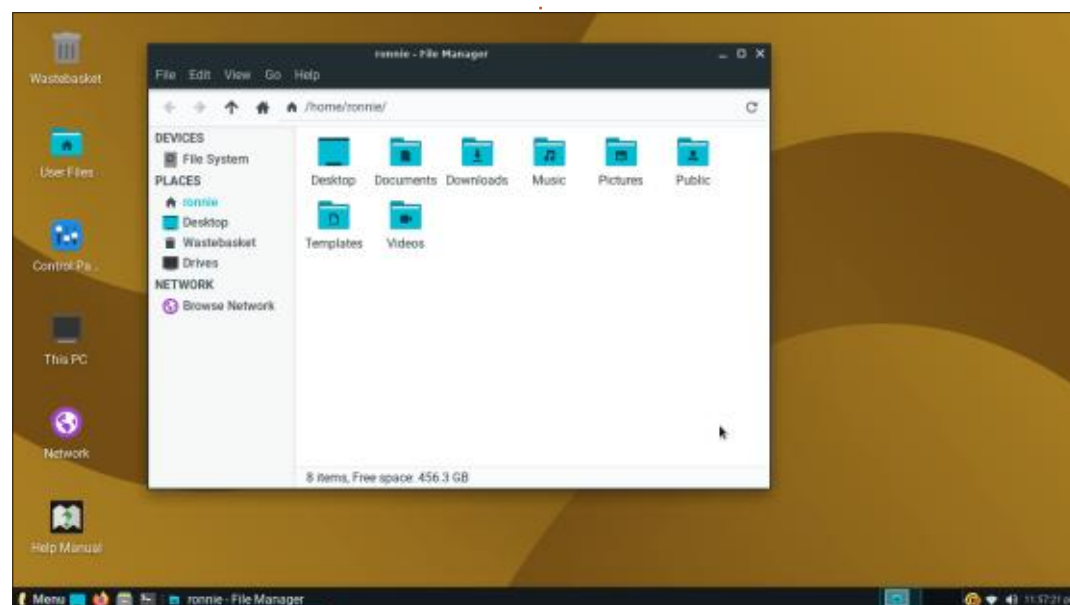
If you like tinkering with settings, then LL definitely has you covered. There are ton of things to play with in the Settings window. I can't possibly list them all here, but here's a taste:

- About Me
- Appearance
- Desktop
- File Manager Settings
- Notifications
- Panel



- Preferred Applications
- Screensaver
- Window Manager
- Window Manager Tweaks

- Workspaces
- Color Profiles
- Display
- HiDPI Settings



REVIEW

- Keyboard
- Mouse and Touchpad
- Power Manager
- Removable Drives and Media
- ... and that's without even mentioning the System settings!

CONCLUSION

What a surprise! I really wasn't expecting much from Linux Lite, but it's definitely had a big impression on me. I haven't had a chance to really push it to its limits by running a load of stuff to see how it copes, but its fresh look and speedy desktop has definitely convinced me to keep it. I'll let you know how it goes...

Linux Lite download: <https://www.linuxliteos.com/download.php>

MINIMUM RECOMMENDED SPECIFICATIONS:

CPU: 1GHz processor

RAM: 768MB ram

STORAGE: 8GB

RESOLUTION: VGA screen

1024x768 resolution

MEDIA: DVD drive or USB port for the ISO image

PREFERRED SPECIFICATIONS:

CPU:

1.5GHz processor

RAM: 1024MB ram

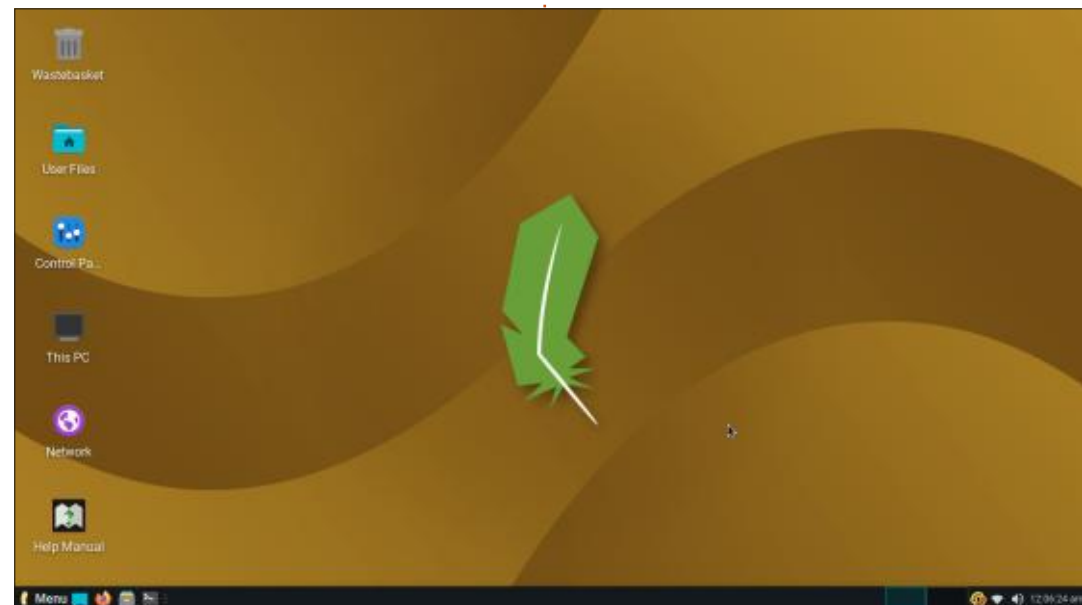
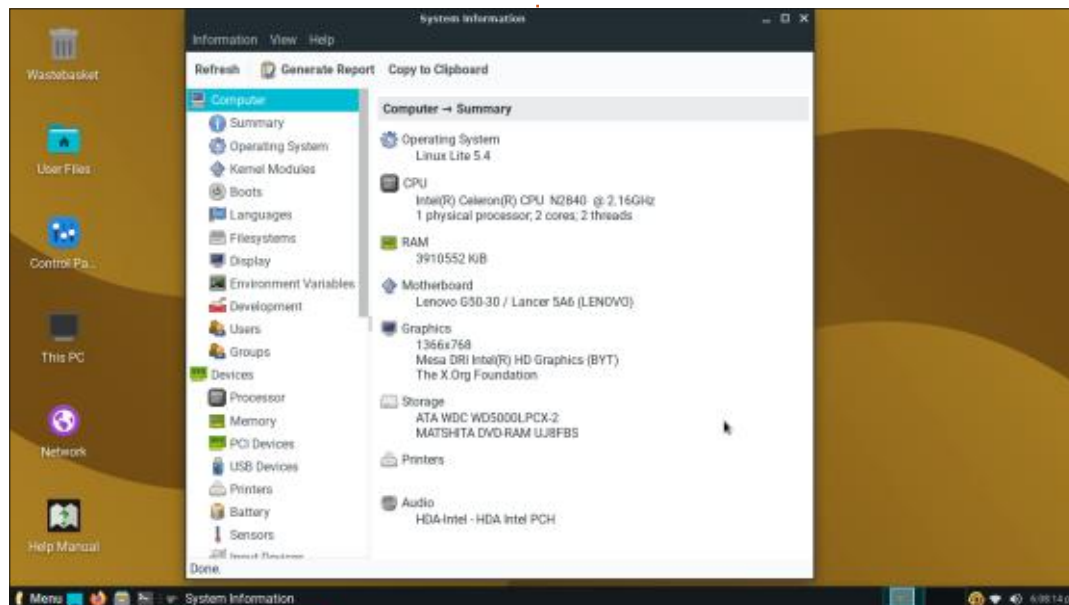
STORAGE: 20GB

RESOLUTION: VGA, DVI or HDMI screen 1366x768

MEDIA: DVD drive or USB port for the ISO image



Ronnie is the founder and editor of Full Circle magazine. He's a part time artist and wood carver and his work can be seen at: ronnietucker.co.uk





REVIEW

Written by Erik

PhotoFilmStrip

Web page: <https://www.photofilmstrip.org/en/>

Download page: <https://sourceforge.net/projects/photostoryx/>

Version: 3.7

Price: Free!

Blurb: *"PhotoFilmStrip creates movies out of your pictures in just 3 steps. First select your photos, customize the motion path and render the video. There are several output possibilities for VCD, SVCD, DVD up to FULL-HD. Creates animated slideshows."*

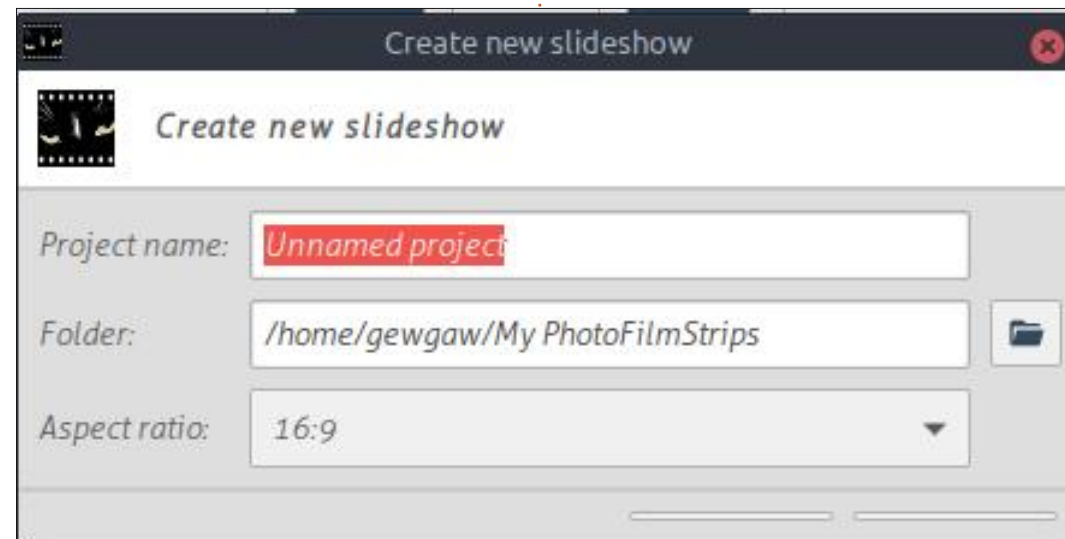
Do not use the version (3.4) from the software centre as it is buggy as all heck!

Let me set the scene. Komorebi is an application that allows looped videos to be played as "live" background wallpaper. Perfectly looped, short, videos are hard to find. So I had an idea, why not loop some pictures of the animals in the national park with nice transition

effects? With music... How would I do that? Enter PhotostoryX, only it is now Photofilmstrip and not to be confused with the website of the same name. I found the application in the software centre, but I saw a "never" at "updated". Mmm I thought, let me give it a go. Issues 'n tissues. Like missing buttons. (see image)

Missing buttons at the bottom and not clickable...

I went to the sourceforge page and grabbed a .deb-file of version 3.7. This seemed to work. (The



download is a .deb-file, so no building from scratch.)

The interface is easy to work with, there are no complicated settings and oodles of buttons. This makes it very easy to pick up and use for a novice. The only thing you need to worry about is the aspect ratio of your display it will be playing on. Once in, you need to select the pictures or the folder. You can select multiple pictures, by holding down the control or shift keys.

Your workspace is divided into three panes, the top two panes are for you to select your transitions. You can drag-move the rectangles that signify panning and you can



roll the mouse wheel to signify the zooming. The bottom pane is the order that these pictures will display. Between the top two panes, you will have the buttons for the motion, and between the top and bottom panes you will have the effects and rotation, as well as description or “subtitles”. The top two panes represent the start and end of your transformations, where to start and where to end. The centre vertical strip buttons are self-explanatory. You can hover your mouse over each for the tool tip. The centre horizontal strip may be a little confusing. There are but two “effects” sepia and black and white. Movement has a time in seconds, this is how long it takes for the image to move from the start position to the end position. The movement can also be “delayed” - there is no movement at first, giving you time to ogle the picture, “accelerated” - speed up and slows down and “linear” -constant movement speed. The transition effects are none, fade and roll. I am sure you can see where that goes and next to that the time in which to do it. The subtitles box allows you to add descriptions of the people or places, like “Grandma’s 90th”. The bottom panel has your

arrangement and it is as easy as drag-and-drop. You can also use the move and delete buttons to the right of your film strip. Now about the rotation, it is either clock-wise or anti clock-wise, the icons may confuse Android users.

You can also let your slide shows play to music, and PhotoFilmStrip supports a wide variety of formats. If you are unsure of your format, the importer offers a play button for you test your music.

If you are done designing your PhotoFilmStrip you can create a movie file. The following table shows which formats are available with their default properties. The profile field allows you to select the desired video type. The following table shows which types are available with their default properties.

The “Subtitles” can be manipulated by using settings

delimited by a semi-colon.

A full list of text overlay settings can be found here: <https://gstreamer.freedesktop.org/documentation/pango/textoverlay.html?gi-language=c>

PhotoFilmStrip is a very user-friendly, easy application to use. I now have my photos running as a screen saver with soft music playing as I am running VLC full screen. Very soothing. I also tested it on my

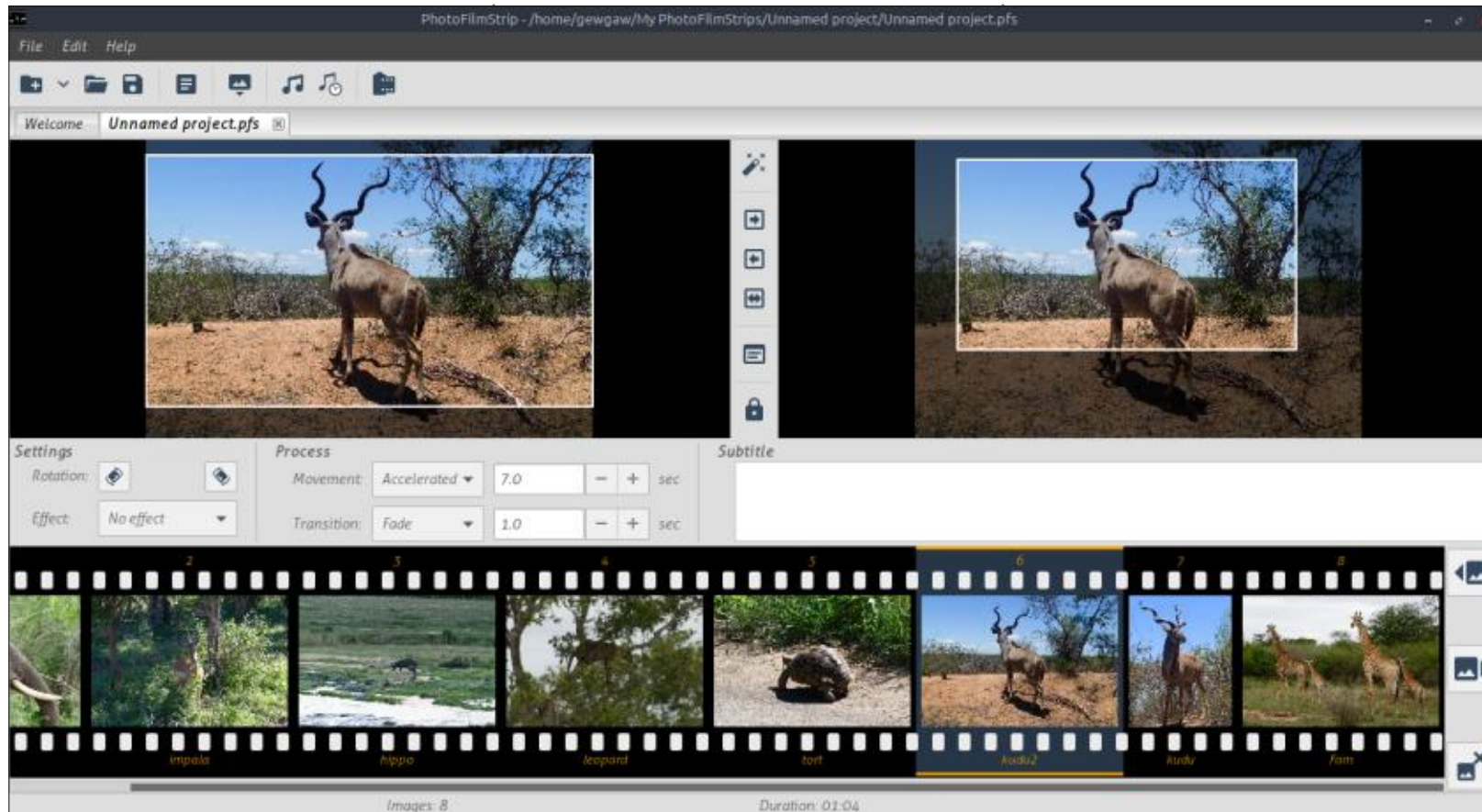
Name	Resolution			Bitrate	Compression
VCD	352x288 (PAL)	352x240 (NTSC)		1150 kBit/s	MPEG-1
SVCD	576x480 (PAL)	480x480 (NTSC)		2500 kBit/s	MPEG-2
DVD	720x576 (PAL)	720x480 (NTSC)		8000 kBit/s	MPEG-2
Medium	640x360 (360p)			1000 kBit/s	various
Medium	854x480 (480p)			2500 kBit/s	various
HD	1280x720 (720p)			7500 kBit/s	various
Full-HD	1920x1080 (1080p)			12000 kBit/s	various
UHD	3840x2160 (2160p)			50000 kBit/s	various
UHD-2	7600x4320 (4320p)			60000 kBit/s	various

REVIEW

older PC with a 4:3 display and it works like a charm! Komorebi is forgotten. I have to try this on the raspberry pi soon. I suspect it could make a nice digital photo frame. If anyone out there in FCM land has a spare \$5 Raspberry Pi Zero you would like to donate for a project, mail me on:

misc@fullcirclemagazine.org or find me on Telegram [@EriktheUnready](https://www.telegram.me/EriktheUnready). (local pi-shop has a one, pi zero per customer

policy, at \$189, unless I want to pay \$300+ for one from somewhere else.)



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



LETTERS

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

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FULL CIRCLE NEEDS YOU!



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

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

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





Q&A

Compiled by EriktheUnready

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

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

At work, we pre-install customers' PC's with what they need. We don't, however, interfere with passwords. That is the customer's baby. (I have been bitten too many times over the years with "what's my password?" phone calls at ungodly hours.) If I need to issue you a temporary password, that you need to change, it will be something like "*I.eat.ICECREAM.0n@sund4ymorn1ng^^" - so that they change it, as it is too much to type, or too difficult to remember. Too many times have

I seen Administrators issue 'Login1' or 'Password.1' and the user just continues with Login2 etc. *grumble* Moving right along... The thing that gets my goat is, without fail, I will still get: "I forgot my password, what did you make it?" When I didn't. I have a line I spin when they ask me what they should make it. My usual for Skype is: use the Husband/kid/dog's name and in that order. That way, when I get the line above about what *I* made the password - blame shifting, I say -, I retort with the same line, hopefully helping them remember. This has had mixed success, as usually they (users) think their name with a year after is a good password, then get upset when their emails/Fakebook/Skype are hacked or whatever. (Try it out to see how lax passwords are, pick a random on FB and try name +1 or name +123... Louise in Australia, change your password, Louise123 is a horrible password!!) What are some good password recipes you give customers/family? Share them with us.

Q : I have ubuntu 20.04 on my Acer laptop. It works fine, but when I run youtube-dl -U , I get an error saying Debian does not allow upgrades. I am lost, this is the only way I know how. I have done sudo apt update / upgrade, but it stays the old version.

A : The short answer is... Run these 4 commands in order:
`sudo apt remove youtube-dl`

```
sudo curl -L https://yt-dl.org/downloads/latest/youtube-dl -o /usr/local/bin/youtube-dl
```

```
sudo chmod a+rx /usr/local/bin/youtube-dl
```

```
sudo apt install python3-pip
```

or go here:

<https://write.corbpie.com/how-to-install-upgrade-youtube-dl-on-ubuntu-20-04/>

Q : Just so you know I am no computer savvy spring chicken. I use Ubuntu 18.04 with Shotwell and Fotoxx to manage my photos of my cat. Here she is;
<dsc04052021524.jpg> I have

started taking videos with my camera and playback is with VLC. It is the ugliest interface I have seen in a long time. Under "plugins and extensions", I can download skins , but I can't apply them. Why?

A : I cannot tell you that. I have always grabbed my .vlt-files (VLC theme files) and in 'preferences', changed to 'custom skin' in the 'look and feel' and manually selected the path. It always works.

Q : I was trying to get MacOS on my laptop via KVM , but it keeps failing, right in the beginning one command keeps failing , but I copy / paste it. ayesha@ayesha
egrep -c '(svm|vmx)' /proc/cpuinfo
bash: syntax error near unexpected token `('

A : Word processors... (' != ') rather type it out than copy and pasting it. It is good practice. Since this is in a word processor also, here is a picture:

Q : I am not a night owl, I am an early bird, and I would like to have my laptop wake up with me in the morning, so that when I get up, it is waiting ready for me. I don't want to leave it on all night either. Is this even possible?

A : I turn mine on - on the way to the kettle, it's one button press, but to each his own. What you are looking for is "rtcwake". You can test if your computer supports this by:

```
sudo rtcwake -m mem -s 30
-if you leave it in sleep
and: sudo rtcwake -m off -s
60 -if you turn it off.
```

Q : I got a real cheapie plastic HP laptop, in purple, beggars can't be choosers, that has Windows 10 home on it. I want to put Xubuntu or Lubuntu on it, but it won't let me boot off my USB stick. Always Windows. Help?

A : Turn off fast boot (for now) in the BIOS, it caches the Windows boot, do the F9 thing to boot off your Ubuntu thumb drive and turn it back on. That *should sort you out, if not, let me know.

Q : I just got my first SSD - we are not well-to-do, what tips can you give me to extend the life of my SSD?

A : Change your vmwappiness to 10, edit your fstab to have noatime, uninstall applications you do not use, that could end up in your startup file, like bluez, if you don't use bluetooth or wacom for a tablet.

Q : Somehow my installation of Xubuntu 18.04 has acquired some KDE packages, I use XFCE, and I was wondering if I could just uninstall those, but what would it break?

A : From the man page: --no-act No action; perform a simulation of events that would occur based on the current system state but do not actually change the system. <http://manpages.ubuntu.com/manpages/bionic/man8/apt-get.8.html>

Q : I installed Ubuntu on my Lenovo thinkstation with this video. <https://www.youtube.com/watch?v=GqJBniwj1Mg> But I don't know how to work this, I need to

get my computer back up and running again with Windows. Everyone says I need to install Windows, but I have never done it, I have always just got my PC's with Windows and I need all my stuff.

A : Then it is best you go over to a Windows forum. If you decide to give Ubuntu a go, we are here for you.

Q : I keep seeing "USB device failed" in Windows, but I have none such nonsense in Ubuntu. My keyboard and mouse work fine, as both are USB. What could be wrong?

A : *Shrug* Check ALL USB devices, it could be a fan or LED or coffee cup warmer too. Unplug them all and plug them in one-by-one.

Q : With the silicone shortage and all, I have struggled to find a USB headset, so I got one from Cash crusaders, model Dixon BS-V12, but it won't work in Ubuntu, they tested it at the store, so I know it works. Somehow, nothing with Ubuntu. I can't even find it in the sound settings.

A : Never assume. Unless the store clerk tested in front of you, it didn't happen. They can say they tested all they like, but that model uses USB only to turn on an LED. Sound is still via 3.5mm jack.

Q : My laptop has an Intel 3160 WiFi card and previously on Ubuntu 16.04 but not now on Ubuntu 20.04 I can not install the proprietary driver. Now the driver panel says no additional drivers. How come?

A : I think it is now in the iwlwifi module. So no need to add anything.

Q : How can I get rid of a cookie acceptance pop up on my favourite website, because I set my Firefox to delete all cookies when the tab is closed. On top of that I have a cookie delete add-on, so every time I visit the website I get bugged by this pop up.

A : If you have ublock add-on installed, simply right-click the box and block it. It may require

several tries, but you will figure it out.

Q: So I tried flatpaks and they work great. The issue is that the website (Flathub) has really bad images and descriptions about the apps. What are my options?

A: I am not too sure what you want from me, but the beauty of open source is you can do it yourself. Make your own. Or you can incorporate flatpaks into the software centre, or you can visit www.pling.com. It is usually a good idea to research any software first before just installing it.

Q: We are a few guys working on a lab Ubuntu server. I can't really use the history command as it is filled with commands from other users using root. Also spoilers. How do I start it from fresh when it is my turn?

A: Use your own user with sudo, or if they don't mind delete the history file before you start.

Q: My laptop is positively ancient, but it has a HDMI port. So I got

a Dell 22 inch S2240LC on it with a new HDMI cable. It looks like it has a grey film on compared to the laptop screen. What kind of adjustments can I do on Ubuntu and where do I find them on 20.04.3 please?

A: Before fiddling with colour profiles, I suggest checking the monitor and move the contrast to 80 and the brightness to 50. Nine times out of ten, this solves the greyness issue. Otherwise, you can open the 'color profiles' and import your monitor profile.

Q: I am very new to Xubuntu, so don't laugh. My media PC says battery low, like my laptop does, but it does not have one. This pops up while watching movies and it is very annoying. Thanks in advance.

A: It may be your mouse!! Before my fancy mouse got feet, it used to report to Ubuntu that the battery status was 70%. (even if it was flat) You can click on the battery icon and see what battery is listed. Or... Go to devices in your power manager to see what batteries are detected.

Q: I have a hand-me-down laptop from my uncle, a core2duo 32bit that I need 32bit Ubuntu for, but I can't find it. Can you send me the link to the last one. I know it is not available any more.

A: That CPU is most definitely 64bit. If 64 bit Ubuntu won't load, you probably need the latest BIOS update. Also verify your installation medium and ISO file.

Q: My laptop seems to slow down during the day, at 7am it is pretty snappy and by 7pm it is treacle. Here is my output of lshw. <removed> and free -h says I have 4.3Gi available, so memory usage is about 50%. My swap file is the same as my memory, 8GB. Oh and I am on 20.04LTS.

A: I have had an issue like this before, but it was cooling related. Clear the path of the airflow of your laptop fan and exhaust. Replace your heat transfer paste and make sure all your laptop feet are still there. (yes, it is important as it lifts your laptop from the desk) As a test once done, use your laptop on an active cooling stand and see if the problem is still there.

Q: Please man, how can I rename files in Thunar to remove the website name some idiot added to all the files? If I select them all, I don't see that option, yet I know it is possible, Linux is magic. This is what I see <DCIM00142>

A: What you are looking for is under that "insert /overwrite" go a few more down until it says "search / replace" then add the website name as the pattern to search and leave the replace blank.

Q: How can I block websites using UFW?

A: UFW is for blocking IP's or a range of IP's and ports, to block a website simply add it to your hosts file in your /etc folder.

For example: 0.0.0.0 12724.xyz



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.



This issue, I would like to get some feedback from our readers regarding the Linux games they play. Is Dwarf Fortress enough for you? Are you addicted to minetest? How about sleuthing in Noir Chronicles: City of Crime? Kill time with cookie clicker? Bash skulls with Doom Eternal? Happy with Stardew Valley? Online slots more your thing? Does Mario race your pulse? How about some Chess?

What addicts people to a game? Why do people play them?

Okay, addict is a strong word.

I talked to some casual and serious gamers alike to see what makes them tick. NOTE: These are pseudonyms, don't ask. I could not find another female gamer to interview, so it's not 50/50.

LIZ: CASUAL GAMER, ENJOYS MATCH 3, HIDDEN OBJECT GAMES AND CARD GAMES.

When do you like to play games?:

As a filler, when I am waiting for the food to cook or late at night to take my mind off things.

Why do you play games, are you addicted?:

It is something to do. No, it's more like a hobby.

What started you playing games?

My iPad.

Do you use Linux?

Ubuntu Budgie.

Do you have a dedicated game account? (Steam, GoG , etc.)

Big fish games, Artifex Mundi.

Where do you mostly game? And on Linux?

I told you, my Ipad. Arifex Mundi

supports Ubuntu better.

Have you ever been conned into spending more money than you wanted?

Yes, many times, in Facebook games.

SHANE: SERIOUS GAMER, FPS MOSTLY.

When do you like to play games?:

As soon as I get home. I play with a team and we try to get 6 hours a day every day.

Why do you play games, are you addicted?:

It's fun and I like the challenge. Keeps me on my toes. Definitely.

What started you playing games?

My brother with Doom.

Do you use Linux?

Ubuntu and Garuda now.

Do you have a dedicated game account? (Steam, GoG , etc.)

Steam and Epic and Origin.

Where do you mostly game? And on Linux?

My Windows PC. Any time a game is faster on Linux, I game there, but Windows is more geared with overlays and Gfx card management.

Have you ever been conned into spending more money than you wanted?

Every dam DLC.

MIKE: CASUAL GAMER, STRATEGY MOSTLY, SOME ONLINE GAMBLING.

When do you like to play games?:

When I have nothing to do or when the weather is inclement.

Why do you play games, are you addicted?:

My brain needs slowing down. Gaming gives me a sense of achievement that is semi-immediate. Yes, if I had to stop I'd get withdrawal symptoms.

What started you playing games?

We played Warcraft on the college computers and it stuck by me.

Do you use Linux?

Solus, they were the first to have proper Steam integration.

Do you have a dedicated game account? (Steam, GoG , etc.)

Steam and GoG both.

Where do you mostly game? And on Linux?

I have a Windows box, but I play mostly on Steam on Linux these days, since Windows always wants to update when I want to play, so rude.

Have you ever been conned into spending more money than you wanted?

Only in online gambling – Poker, but now it makes me money.

ELIZE: SERIOUS GAMER, ACTION GAMES.

When do you like to play games?:

Right after work. Work is dull, games are exciting.

Why do you play games, are you addicted?:

It gives me and my fiancée some

alone time. Also I grew up with games. Yes, I am a fully fledged gamer girl until I die.

What started you playing games?

My older brother. I just marvelled at the cool graphics.

Do you use Linux?

Yes, Kubuntu.

Do you have a dedicated game account? (Steam, GoG , etc.)

Haha, all of them.

Where do you mostly game? And on Linux?

I play on my gaming PC, me and my other half play console games. Linux laptop is filled with free games, I'm sort of addicted to itch.io at the moment.

Have you ever been conned into spending more money than you wanted?

Consoles are the biggest con.

ROB: SERIOUS GAMER, EMULATION.

When do you like to play games?:

All day.

Why do you play games, are you addicted?:

I like JRPG games, and I did not get to play them much as a kid. I'm catching up now. I'm not addicted, but it fills my day.

What started you playing games?

My friend had a Nintendo with Dragon Quest and I loved it.

Do you use Linux?

Gentoo always.

Do you have a dedicated game account? (Steam, GoG , etc.)

I have a Steam account, but I don't

use it as my games are emulated.

Where do you mostly game? And on Linux?

I have a Ryzen beast running Gentoo. That is my Linux gaming PC.

Have you ever been conned into spending more money than you wanted?

No.

SEAN: CASUAL GAMER, MINECRAFT MOSTLY.

When do you like to play games?:

When I can, my little one will walk soon and then I won't have time.

Why do you play games, are you addicted?:

It's fun and I get to make a lot of friends online. Maybe.

What started you playing games?

My aunt bought Minecraft when it came out and I got to play on her laptop.

Do you use Linux?

Yes, currently MX Linux.

Do you have a dedicated game account? (Steam, GoG , etc.)

Anywhere I can get free games.

Where do you mostly game? And on Linux?

I have an old HP laptop that was given to me. We are not well to do. Shush, but it's almost all pirated. Only Linux.

Have you ever been conned into spending more money than you wanted?

No.

SIDNEY: CASUAL GAMER, INDIE GAMES.

When do you like to play games?:

Before bed and weekends.

Why do you play games, are you addicted?:

Imagination is more powerful than anything and it stimulates my imagination. Not really.

What started you playing games?

I started paying attention when I wanted to write my own.

Do you use Linux?

Yes, Ubuntu and Manjaro.

Do you have a dedicated game account? (Steam, GoG , etc.)

Almost all games are delivered digitally these days, you have to have one.

Where do you mostly game? And on Linux?

In the spare room, it's set up as my home office. I use Lutris.

Have you ever been conned into spending more money than you wanted?

No, but my mom has.

BRANDON: CASUAL GAMER, OLD-SCHOOL, SOME INDIE.

When do you like to play games?:

Any time really. But mostly afternoons or evenings.

Why do you play games, are you addicted?:

I use gaming as a pressure valve for my brain. It lets me think about something, but be distracted enough that I don't go crazy with my unresolved ideas and thoughts. And, yes, I'm addicted to Terraria.

What started you playing games?

I was born... Lol

Do you use Linux?

Yes. Debian.

Do you have a dedicated game account? (Steam, GoG , etc.)

Steam

Where do you mostly game? And on Linux?

I mostly game on Win10, but I do have some of my games ported into Debian.

Have you ever been conned into spending more money than you wanted?

No. I'll play games until I hit an obvious paywall. Then I either try hacking the game to remove the paywall, or edit my save so the paywall doesn't matter.

But my wife once spent about \$2000 on IAP's in a game..

GORD (FORMER Q&A WRITER EXTRAORDINAIRE)

When do you like to play games?:

In the morning, to get my brain in gear.

Why do you play games, are you addicted?:

Maybe.

What started you playing games?

There was a terminal-based Star Trek game at the University of Toronto, which was good, but had a couple of bugs. It was written in APL, which made it fairly easy to print out the source code. (I had access to a printing terminal which had the oddball APL character set.) My buddy typed in the code on our employer's multi-million dollar IBM mainframe. He fixed the bugs and added numerous extensions, including increasing the top difficulty level from 99 to 999. By the time he finished, there were close to a dozen types of characters: Klingons, Romulans,

Tholians, lotions, etc. One Friday evening after work I sat down to play a 999 game, and by mid-afternoon on Saturday I had won.

Do you use Linux?

Xubuntu and Mint Mate.

Do you have a dedicated game account? (Steam, GoG , etc.)

No.

Where do you mostly game? And on Linux?

On my main computer.

Have you ever been conned into spending more money than you wanted?

I haven't spent any money on games since buying Chess for the Commodore PET, several decades ago.

Tell us about your gaming experiences:
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.



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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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