



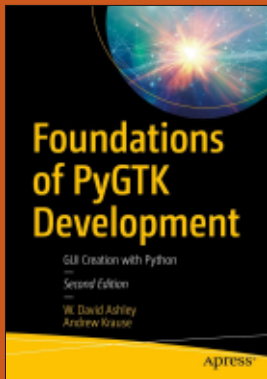
Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #168 - April 2021



BOOK REVIEW



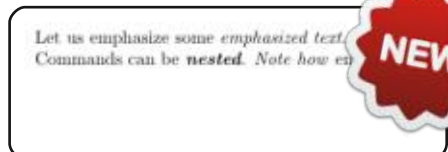
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HowTo



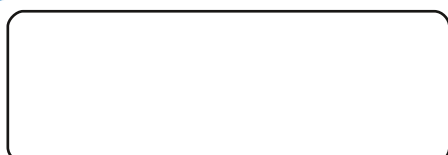
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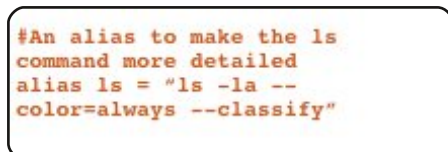


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Full Circle

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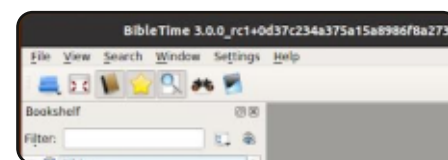
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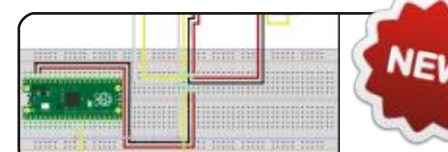
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WELCOME TO THE LATEST ISSUE OF FULL CIRCLE

This issue marks **fourteen years** (!) of Full Circle. Wow! As ever, I'm indebted to those who consistently write articles, create other editions, and spread the word. Without them? We'd never have gotten this far. Let's keep going for another fourteen years!

This month, we have your usual doses of Python, Latex, Inkscape, and whatnot. Elsewhere, we have a look at Shells.com which is basically a powerful Linux PC in the cloud that you can access from any device that has a browser. Pretty cool! We also have a book review, and a game review, and (as promised last month) a quick look at how you, the readers, discovered FCM.

As I write this, 21.04 has been released. Many of you might be wondering why you haven't had that shiny little pop-up giving you the option to upgrade. Well, it seems there's a pretty bad bug somewhere that's caused the developers to hold back on offering the upgrade. Probably for the best. I forced the upgrade and haven't had any major show-stopping problems (thankfully!). One bad thing I did run into (that made my heart race) was that after the upgrade, Scribus wouldn't load! It kept crashing. To make this issue I'm having to use an appimage edition of Scribus.

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 link is: <https://t.me/joinchat/PujkVH1HopRKvfd3>. I hope to see you there. Come and say hello.

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

Ronnie

ronnie@fullcirclemagazine.org



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DIGIKAM 7.2 RELEASED:

28/03/2021

DigiKam 7.2.0, developed by the KDE project, is out. The program provides a comprehensive set of tools for importing, managing, editing and publishing raw photographs and digital camera images. The code is written in C++ using Qt and the KDE libraries, and is distributed under the GPLv2 license. Installation packages are available for Linux (AppImage, FlatPak), Windows and macOS.

<https://www.digikam.org/news/2021-03-22-7.2.0-release-announcement/>

4MLINUX 36.0 RELEASED:

28/03/2021

4MLinux 36.0, a minimalist custom distribution which is not a branch of other projects, uses the graphical environment based

off JWM. 4MLinux can be used not only as a live environment, but also as a disaster recovery system and a platform for running LAMP servers (Linux, Apache, MariaDB and PHP). The size of the iso image is 930 MB (i686, x86_64).

The new release adds support for the NBD (Network Block Device) protocol and exfatprogs utilities for working with the exFAT file system and exFAT support built into the GParted partition editor. Included is: VeraCrypt disk partition encryption system, GTKHash checksum calculation program and a utility for creating LiveUSB UNetbootin. Removed packages are related to Flash Player from the repository.

<https://4mlinux-releases.blogspot.com/2021/03/4mlinux-360-stable-released.html>

MALICIOUS CHANGES DETECTED IN THE PHP PROJECT GIT REPOSITORY:

03/29/2021

The developers of the PHP project warned about the compromise of the project's Git repository and the discovery of two malicious commits added on March 28 to the php-src repository on behalf of Rasmus Lerdorf, the founder of PHP, and Nikita Popov, one of the key PHP developers.

Since there is no confidence in the reliability of the server on which the Git repository was hosted, the developers decided that maintaining the Git infrastructure on their own creates additional security risks and moved the reference repository to the GitHub platform, which is proposed to be used as the primary one. From now on, all changes should be sent to GitHub, and not to git.php.net, including when developing, you can now use the GitHub web interface.

<https://news-web.php.net/php.internals/113838>

NEW VERSION OF CYGWIN 3.2.0, THE GNU ENVIRONMENT FOR WINDOWS:

03/29/2021

After over a year of development, Red Hat has released a stable release of Cygwin 3.2.0, which includes a DLL for emulating the underlying Linux API on Windows, allowing you to build Linux-specific programs with minimal changes. The package also includes standard Unix utilities, server applications, compilers, libraries and header files directly assembled for execution on Windows.

<https://www.mail-archive.com/cygwin-announce@cygwin.com/msg09612.html>

STORM GAME ENGINE OPEN SOURCED:

04/02/2021

The Storm game engine used in the Corsairs RPG series aimed at naval combat enthusiasts had its source code revealed. (By agreement with the copyright holder) The code is open under the GPLv3 license. The developers hope that the availability of the code will open up new opportunities for the development of both the engine and the game itself, thanks to the introduction of innovations and fixes by the community.

The engine is written in C++ and so far only supports the Windows platform and the DirectX 9 graphics API. Further development plans mention the replacement of its own rendering code with the bgfx cross-platform library, which, in addition to DirectX, supports the OpenGL, Vulkan, Metal and WebGL graphics APIs, and can be used on Linux, Android and FreeBSD. They also planned to replace the built-in math library and code for handling input with glm and gainput. The

built-in scripting language is planned to be replaced with Lua, the system of configuration files in the ".ini" format with JSON, and specific formats of binary resources - with standard formats.

<https://store.steampowered.com/news/app/223330/view/3013444995188538670>

PROXMOX MAIL GATEWAY 6.4 RELEASED:

04/04/2021

Proxmox, known for developing the Proxmox Virtual Environment distribution for deploying virtual server infrastructures, has released the Proxmox Mail Gateway 6.4 distribution. Proxmox Mail Gateway is presented as a turnkey solution for quickly creating a mail traffic control system and protecting the internal mail server.

An ISO installation image is available free of charge. Distribution-specific components are open under the AGPLv3 license. To install updates, both the paid Enterprise repository and two free

repositories are available, which differ in the level of update stabilization. The system part of the distribution is based on the Debian 10.9 (Buster) and the Linux 5.4 kernel. It is also possible to install the Proxmox Mail Gateway components on top of existing servers based on Debian 10.

<https://www.proxmox.com/en/proxmox-mail-gateway>

ORACLE HAS RELEASED THE UNBREAKABLE ENTERPRISE KERNEL R6U2:

04/04/2021

Oracle have released a second functional update for the Unbreakable Enterprise Kernel R6, positioned for use in the Oracle Linux distribution as an alternative to the standard package with the Red Hat Enterprise Linux kernel. The kernel is available for x86_64 and ARM64 (aarch64) architectures. The kernel sources, including the breakdown into individual patches, are published in the Oracle public Git repository.

Unbreakable Enterprise Kernel

6 is based on Linux 5.4 (UEK R5 was based on 4.14) with new features, optimizations and fixes, tested for compatibility with most RHEL applications, and optimized specifically for industrial software and Oracle hardware. Installation and src-packs with UEK R6 kernel of the Linux available for Oracle 7.x and 8.x

<https://blogs.oracle.com/linux/announcing-the-unbreakable-enterprise-kernel-release-6-update-2-for-oracle-linux>

HARUNA 0.6.0 VIDEO PLAYER AVAILABLE:

04/04/2021

Haruna 0.6.0 is out. It is an add-on over MPV with the implementation of a graphical interface based on Qt, QML and libraries from KDE Frameworks. Features include the ability to play videos from online services (youtube-dl is used), support for automatically skipping video sections that contain certain words, and moving to the next section by pressing the middle

mouse button on the position indicator in the video. The program is written in C++ and is distributed under BSD and GPLv3 licenses. Packages are available in flatpak format.

<https://github.com/g-fb/haruna>

TeX Live 2021 RELEASED:

04/05/2021

TeX Live 2021 distributio, created in 1996 based on the TeTeX project, has been released. TeX Live is the easiest way to deploy a scientific documentation infrastructure, regardless of the operating system used. A DVD image (4.4 GB) of TeX Live 2021 is available for download, which contains a working Live environment, a complete set of installation files for various operating systems, a copy of the CTAN (Comprehensive TeX Archive Network) repository, and a collection of documentation in various languages.

<https://www.mail-archive.com/cygwin-announce@cygwin.com/msg09615.html>

IceWM 2.3 WINDOW MANAGER RELEASED:

04/05/2021

IceWM 2.3, the lightweight window manager is now available. IceWM provides full control through keyboard shortcuts, the ability to use virtual desktops, taskbar and application menus. The window manager is configured through a fairly simple configuration file and is fully skinnable. Built-in applets are available for monitoring CPU, memory and network traffic. Several third-party GUIs for customization, desktop implementations, and menu editors are being developed separately. The code is written in C++ and is distributed under the GPLv2 license.

<https://ice-wm.org/>

FREE HEROES OF MIGHT AND MAGIC II 0.9.2:

04/05/2021

A release of project fheroes2 0.9.2 is available, trying to recreate the engine of Heroes of Might and Magic II for Linux. The project code is written in C++ and is distributed under the GPLv2 license. To start the game, you need files with game resources, which can be obtained, for example, from the demo version of Heroes of Might and Magic II.

<https://github.com/ihhub/fheroes2/releases/tag/0.9.2>

GOOGLE WINS JAVA AND ANDROID LITIGATION WITH ORACLE:

04/05/2021

The US Supreme Court ruled on the ongoing Oracle v. Google case since 2010 over the use of the Java API on the Android platform. A higher court sided with Google and ruled that the Java API was fair use.

The court agreed that Google's goal was to create a different system focused on solving problems for a different computing environment (smartphones), and the development of the Android platform helped to realize and popularize this goal. History shows that there are various ways in which the re-implementation of an interface can further the development of computer programs. Google's intent has been to achieve this kind of creative progress, which is the primary focus of copyright law.

https://www.supremecourt.gov/opinions/20pdf/18-956_d18f.pdf

WEBOS OPEN SOURCE EDITION 2.10 RELEASE:

04/06/2021

WebOS Open Source Edition 2.10 open platform, which can be used on a variety of portable devices, boards and car infotainment systems is out. Raspberry Pi 4 boards are considered as a reference hardware platform. The platform is

developed in a public repository under the Apache 2.0 license, and development is overseen by the community, adhering to a joint development management model.

The webOS system environment is built using the OpenEmbedded tooling and base packages, as well as the build system and metadata set from the Yocto project. The key components of webOS are the System and Application Manager (SAM), which is responsible for running applications and services, and the Luna Surface Manager (LSM), which forms the user interface. The components are written using the Qt framework and the Chromium browser engine.

<https://www.webosose.org/blog/2021/04/02/webos-ose-2-10-0-release/>

KDE HAS TAKEN OVER THE MAINTENANCE OF THE PUBLIC QT 5.15 BRANCH:

04/06/2021

Due to the restrictions by Qt Company of access to the

source repository for the LTS branch of Qt 5.15, the KDE project has begun supplying its own collection of patches, Qt5PatchCollection, aimed at keeping the Qt 5 branch afloat until the community migration to Qt6 is complete. This includes fixes for functional defects, crashes and vulnerabilities. The patches are available in the Git repositories corresponding to Qt modules.

<https://dot.kde.org/2021/04/06/announcing-kdes-qt-5-patch-collection>

KDE NEON LTS TERMINATION:

The developers of the KDE Neon project, which generates Live images with the current versions of KDE programs and components, announced the termination of the development of the LTS edition of KDE neon Plasma. It had been supported for eighteen months instead of the usual four. The build was designed for everyday use by people who want to get new versions of applications, but keep a stable desktop (the LTS branch of the Plasma desktop was offered,

but with the most recent versions of the applications).

The termination of LTS-assemblies of KDE neon is scheduled for July 1.

<https://blog.neon.kde.org/index.php/2021/04/06/the-end-of-lts-edition/>

LYRA AUDIO CODEC FOR SPEECH TRANSMISSION WITH POOR CONNECTION QUALITY:

04/06/2021

Google has unveiled a new Lyra audio codec optimized for maximum voice quality, even over very slow links. The Lyra code is written in C++ and is open under the Apache 2.0 license, but among the dependencies required for its operation is the proprietary libsparse_inference.so library with a kernel implementation for mathematical calculations. It is noted that the proprietary library is temporary - in the future, Google promises to develop an open replacement and provide support for various platforms.

In terms of the quality of the transmitted voice data at low speeds, Lyra is significantly superior to traditional codecs, which use digital signal processing methods. To achieve high quality voice transmission in conditions of a limited amount of transmitted information, in addition to the usual methods of sound compression and signal conversion, Lyra uses a speech model based on a machine learning system that allows you to recreate the missing information based on typical speech characteristics. The model used to generate the sound has been trained over thousands of hours with voice recordings in over 70 languages.

<https://opensource.googleblog.com/2021/04/lyra-enabling-voice-calls-for-next-billion-users.html>

FIREFOX DECIDED NOT TO REMOVE COMPACT MODE AND ENABLE WEBRENDER FOR ALL LINUX ENVIRONMENTS:

04/07/2021

The Mozilla developers decided not to remove the compact display mode for panels and to continue shipping related functionality. In this case, the setting visible to users for selecting the panel mode (the "hamburger" menu in the panel -> Customize -> Density -> Compact or Personalization -> Icons -> Compact) will be removed by default. To revert the setting, the "browser.compactmode.show" parameter will appear in about:config, returning a button to activate compact mode, but with a

note that it is not officially supported. For users with compact mode enabled, the parameter will be activated automatically.

The change will be implemented in Firefox 89, slated for May 18, which also plans to include an updated look developed by the Proton project.

https://bugzilla.mozilla.org/show_bug.cgi?id=1703254

WARZONE 2100 4.0:

04/07/2021

The free strategy (RTS) game Warzone 2100 4.0.0 has been released. The game was originally developed by Pumpkin Studios and released to the market back in 1999. In 2004, the original code

was released under the GPLv2 license, and the game continued development by the community. Both a single player mode against bots and network games are supported. Packages prepared for Ubuntu, Windows and macOS.

Since the last stable release, over 1000 commits have been sent from many contributors.

<https://github.com/Warzone2100/warzone2100/releases/tag/4.0.0>

IBM TO PUBLISH COBOL COMPILER FOR LINUX:

04/08/2021

IBM announced its decision to publish the COBOL compiler for the Linux platform on April 16. The compiler will ship as a proprietary

product. The Linux version builds on the same technologies as Enterprise COBOL for z / OS and provides compatibility with all current specifications, including the changes proposed in the 2014 standard.

In addition to an optimizing compiler that can be used to build existing COBOL applications, it includes a set of runtime libraries that are required to run programs on Linux. Among the features, the ability to deploy assembled applications in hybrid cloud environments that use the IBM Z (z / OS), IBM Power (AIX) and x86 (Linux) platforms, stands out. In terms of its capabilities and performance, the Linux version is recognized as suitable for developing mission-critical business applications.

COBOL turns 62 this year and remains one of the oldest actively used programming languages, as well as one of the leaders in terms of the amount of code written.

https://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/9/872/ENUSAP21-0019/index.html&request_locale=en



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NEW RELEASE OF ERGO 1.2 WEB APPLICATION FRAMEWORK:

04/08/2021

After a year of development, the Ergo 1.2 framework was released. It implements the complete Erlang network stack and its OTP library in the Go language. The framework provides the developer with flexible tools from the Erlang world for creating distributed solutions in the Go language using ready-made Application, Supervisor and GenServer design patterns. Since the Go language does not have a direct analogue of the Erlang process, the framework uses goroutine as the basis for the GenServer with the recover wrapper to be able to handle exceptions. The project code is distributed under the MIT license.

<https://github.com/halturin/ergo>

GNUPG 2.3.0 RELEASED:

04/08/2021

Three and a half years after the last major release, a new release of the GnuPG 2.3.0 (GNU Privacy Guard) toolkit is out, which is compatible with the OpenPGP (RFC-4880) and S / MIME standards, and provides utilities for data encryption, working with electronic signatures , key management and access to public key stores.

GnuPG 2.3.0 is marketed as the first release of a new codebase that includes the latest updates. GnuPG 2.2 is seen as a stable branch, optimal for general use, and will be supported until at least 2024. GnuPG 1.4 continues to be shipped as the classic low-resource series, suitable for embedded systems, and compatible with legacy encryption algorithms.

<https://lists.gnupg.org/pipermail/gnupg-devel/2021-April/034828.html>

RELEASE OF FFMPEG 4.4:

04/09/2021

After ten months of development, the FFmpeg 4.4 multimedia package is available. It includes a set of applications and a collection of libraries for operations on various multimedia formats (recording, converting and decoding audio and video formats). The package is distributed under the LGPL and GPL licenses, the development of FFmpeg is carried out in conjunction with the MPlayer project .

<http://ffmpeg.org/>

UBUNTU, CHROME, SAFARI, PARALLELS AND MICROSOFT PRODUCTS HACKED AT PWN2OWN 2021

COMPETITION:

04/09/2021

The results of the three days of the Pwn2Own 2021 competition, annually held as part

of the CanSecWest conference, have been summed up. As in the previous year, the competitions were held virtually and the attacks were demonstrated online. Of the 23 targets, operational techniques for exploiting previously unknown vulnerabilities have been demonstrated for Ubuntu Desktop, Windows 10, Chrome, Safari, Parallels Desktop, Microsoft Exchange, Microsoft Teams and Zoom. In all cases, the latest software versions were tested, including all available updates. The total amount of payments amounted to one million two hundred thousand US dollars (the total prize money totaled half a million dollars).

In the competition, three attempts were made to exploit vulnerabilities in Ubuntu Desktop. The first and second attempts were counted, and the attackers were able to demonstrate local privilege escalation through the exploitation of previously unknown vulnerabilities related to buffer overflows and double freeing of memory (components of the problem have not yet been reported, developers are given 90 days to fix errors until the data is disclosed). Bonuses of \$ 30,000

were paid for these vulnerabilities.

The third attempt, made by another team in the category of local privilege abuse, was only partially successful - the exploit worked and made it possible to gain root access, but the attack was not fully credited, since the bug associated with the vulnerability was already known to the Ubuntu developers and an update with a fix was in progress preparation.

<https://www.zerodayinitiative.com/blog/2021/4/2/pwn2own-2021-schedule-and-live-results>

PHP SERVER HACK REPORT:

04/07/2021

The first results of the analysis of an incident related to the detection of two malicious commits in the Git repository of the PHP project with a backdoor activated when a request is sent with a specially designed User Agent header has been published. In the course of studying the traces of the attackers' activities, it was concluded that the git.php.net

server itself, on which the git repository was hosted, was not hacked, but the database with the accounts of the project developers was compromised.

<https://externals.io/message/113981>

OPENTOONZ 1.5, AN OPEN SOURCE 2D ANIMATION PACKAGE:

04/11/2021

OpenToonz 1.5 has been released, continuing the development of the source code for the professional 2D animation package Toonz, which was used in the production of the Futurama cartoon series and some Oscar-nominated cartoons. In 2016, the Toonz code was opened under the BSD license and has continued to evolve as a free project ever since. OpenToonz also supports plug-ins with effects implemented using machine learning technologies, for example, using effects, you can automatically change the style of the picture and simulate distorted incident light, as in cartoons shot using classic technologies, used

before the advent of digital creation packages animation.

<https://github.com/opentoonz/opentoonz/releases/tag/v1.5.0>

SWAY 1.6 ENVIRONMENT USING WAYLAND RELEASED:

11.04.2021

The release of the composite manager Sway 1.6 is available, built using the Wayland protocol and fully compatible with the i3 mosaic window manager and the i3bar panel. The project code is written in C and is distributed under the MIT license. The project aims to be used on Linux and FreeBSD.

i3 compatibility is provided at the command, configuration file and IPC level, allowing Sway to be used as a transparent replacement for i3, using Wayland instead of X11. Sway allows you to place windows on the screen not spatially, but logically. The windows are arranged in a grid that makes the best use of screen space and allows you to quickly manipulate windows with just the

keyboard.

<https://github.com/swaywm/sway/releases/tag/1.6>

XEN 4.15 HYPERVISOR RELEASED:

04/12/2021

After eight months of development, the free Xen 4.15 hypervisor has been released. Companies such as Amazon, Arm, Bitdefender, Citrix and EPAM Systems have contributed to the development of the new release. The release of updates for the Xen 4.15 branch will last until October 8, 2022, and the publication of vulnerability fixes until April 8, 2024.

<https://www.xenproject.org/>

FPGA OPEN SOURCE DEVELOPMENT INITIATIVE:

04/12/2021

Announced the formation of a new non-profit organization,

the Open-Source FPGA Foundation (OSFPGA), aimed at the development, promotion and creation of an environment for the joint development of open hardware and software solutions associated with the use of programmable logic integrated circuits FPGA (field programmable gate array), allowing logic reprogramming work after the manufacture of the chip. Key binary operations (AND, NAND, OR, NOR and XOR) in such chips are implemented using logic gates (switches) that have multiple inputs and one output, the configuration of the connections between which can be changed by software.

<https://osfpga.org/osfpga-foundation-launched/>

NVIDIA INVESTS \$ 1.5M IN MOZILLA COMMON VOICE PROJECT:

04/12/2021

NVIDIA is investing \$ 1.5 million in the Mozilla Common Voice project . Interest in speech recognition systems stems from

the forecast that over the next ten years, voice technology will become one of the main ways people interact with various devices, from computers and phones, to digital assistants and kiosks for selling goods.

The performance of voice systems is highly dependent on the amount and variety of voice data available to train machine learning models. Voice technologies today are mainly focused on English recognition and do not cover the vast number of languages, accents and speech patterns. The investment will help accelerate the growth of public voice data, attract more communities and volunteers, and increase the number of staff working on the project during regular business hours.

<https://blog.mozilla.org/blog/2021/04/12/mozilla-partners-with-nvidia-to-democratize-and-diversify-voice-technology/>

ONE OF THE PROJECT LEADERS LEFT THE PERL COMMUNITY:

04/12/2021

Sawyer X announced his departure from the Perl Project Board and the Core Team. He also resigned as responsible for the formation releases Perl, stopped participating in the committee, provides grants, refused to speak at Perl conferences and deleted his account on Twitter. At the same time, Sawyer X expressed its willingness to complete the ongoing release of Perl 5.34.0, scheduled for May, and then remove its access to GitHub, CPAN and mailing lists.

The withdrawal is explained by the unwillingness to endure any longer the bullying, offensive and unfriendly behavior of some community members. The last straw was the discussion about the advisability of keeping some of the legacy features of the Perl language (Sawyer X is one of the initiators of the creation of the Perl 7 branch intended to replace Perl 5 with a backward compatibility violation, which some other

developers disagree with).

Following a restructuring of the project management process, Sawyer X, along with Ricardo Signes and Neil Bowers, was elected to the governing board making decisions related to the development of Perl. Prior to that, since April 2016, Sawyer X served as the Perl project leader ("pumpking"), responsible for coordinating the work of developers.

<https://perl.topicbox.com/groups/perl-core/T7a4f1bf9e069641f/i-am-stepping-down-from-psc-and-core-effective-immediately>

SLACKWARE 15 ENTERED BETA TESTING:

04/13/2021

Development of the distribution Slackware 15.0 is translated to the stage of beta testing. Slackware has been around since 1993 and is the oldest distribution in existence. The distribution's features are its lack of complications and a simple init system in the style of classic BSD

systems, which makes Slackware an interesting solution for learning how Unix-like systems work, experimenting and getting to know Linux. An installation image of 3.1 GB in size (x86_64) is prepared for downloading , as well as a reduced assembly for running in Live mode.

The main differences in Slackware 15 come down to the upgrade of software versions, including the transition to the Linux 5.10 kernel, the GCC 10.3 compiler set, and the Glibc 2.33 system library.

http://www.slackware.com/changelog/current.php?cpu=x86_64

AMAZON INTRODUCES OPENSEARCH, FORKED ELASTICSEARCH PLATFORM:

04/13/2021

Amazon announced the creation of the OpenSearch project , which forked the Elasticsearch search, analysis, and storage platform and Kibana web interface . The code is distributed under the Apache 2.0 license. In

the future, we plan to rename the Amazon Elasticsearch Service to Amazon OpenSearch Service.

OpenSearch is forked from the Elasticsearch 7.10.2 codebase . Officially, work on the fork began on January 21, after which the forked code was cleaned from components that were not distributed under the Apache 2.0 license, and the elements of the Elasticsearch brand were replaced with OpenSearch. In its current form, the code is still at the alpha testing stage, and the first beta release is expected in a few weeks. It is planned to stabilize the codebase and make OpenSearch ready for use on production systems by mid-2021.

<https://aws.amazon.com/blogs/opensource/introducing-opensearch/>

FREEBSD 13.0 RELEASED:

04/13/2021

Two and a half years after the 12.x branch was formed, FreeBSD 13.0 is released, which is prepared for the amd64, i386,

powerpc, powerpc64, powerpc64le, powerpcspe, armv6, armv7, aarch64, and riscv64 architectures. Additionally, images are generated for virtualization systems (QCOW2, VHD, VMDK, raw) and cloud environments Amazon EC2, Google Compute Engine and Vagrant.

<https://www.freebsd.org/releases/13.0R/announce/>

SYSTEM76 HAS ANNOUNCED THE DEVELOPMENT OF A CUSTOM COSMIC ENVIRONMENT:

04/14/2021

System76, a company specializing in the production of laptops, PCs and servers shipped with Linux, has introduced a new user environment COSMIC (Computer Operating System Main Interface Components), which will replace the modified GNOME desktop that comes with the Pop!_OS distribution. The new user environment will begin shipping with the Pop!_OS 21.04 release scheduled for June. The COSMIC

code is developed under the GPLv3 license.

The user environment previously supplied in Pop!_OS was based on a modified GNOME Shell with additional extensions, its own design, a set of icons, and changed settings. COSMIC continues this endeavor and is also based on GNOME technologies, but differs in a deeper redesign of the desktop and introduction of conceptual changes. Among the main tasks that are planned to be solved during the development of COSMIC is the desire to make the desktop easier to use, expand functionality and increase work efficiency by customizing the environment to suit your preferences.

<https://blog.system76.com/post/648371526931038208/cosmic-to-arrive-in-june-release-of-popos-2104>

X.ORG SERVER 1.20.11 UPDATE WITH VULNERABILITY FIX:

04/14/2021

The release of X.Org Server 1.20.11 has been published, which fixes a vulnerability (CVE-2021-3472) that allows you to elevate your privileges on systems where the X server is running as root. The issue is caused by a bug in the XInput extension that changes the contents of an area of memory outside the allocated buffer when processing ChangeFeedbackControl requests with specially decorated inputs. A similar issue is also fixed in the xwayland component 21.1.1 .

In addition to fixing the vulnerability in X.Org Server 1.20.11, work was also done to clean up the XQuartz DDX component , which is used to run X11 applications in the macOS environment. The new version removes the ability to build XQuartz for i386 systems and discontinues support for macOS 10.3 "Panther", 10.4 "Tiger", 10.5 "Leopard", 10.6 "Snow Leopard", 10.7 "Lion" and 10.8 "Mountain

Lion".

<https://www.mail-archive.com/xorg-announce@lists.x.org/msg01290.html>

NGINX 1.19.10 RELEASED:

04/14/2021

The release of the main branch of nginx 1.19.10 has been formed , within the framework of which the development of new features continues (in the parallel maintained stable branch 1.18, only changes are made related to the elimination of serious errors and vulnerabilities).

<https://mailman.nginx.org/pipermail/nginx-announce/2021/000296.html>

RUST SUPPORT FOR LINUX KERNEL FACED CRITICISM FROM LINUS TORVALDS:

04/15/2021

Linus Torvalds spent reviewing patches c implementation of

possibilities for establishing Rust language drivers to the Linux kernel, and expressed some criticism.

The greatest complaints were caused by the potential for panic escape in erroneous situations, for example, in a situation of insufficient memory, when dynamic memory allocation operations, including those within the kernel, may fail. Torvalds stated that such an approach in the kernel is fundamentally unacceptable and, if this point is not understood, he can completely reject (entirely NAK'ed) any code that tries to use such an approach. On the other hand, the patch developer agreed with the problem and considered it solvable.

Another problem has been attempts to use floating point or 128-bit types, which are not valid for environments such as the Linux kernel. This turned out to be a more serious problem, since at the moment the core (core) Rust library is indivisible and represents one big blob - there is no way to request only some of the features, preventing the use of one or another problematic functionality. The solution to the problem may

require changes to the rust compiler and library, even though the team does not yet have a strategy on how to implement the modularity of the language libraries.

In addition, Torvalds noted that the provided example driver is useless and advised to attach as an example some driver that solves one of the real problems.

Google announced its participation in an initiative to promote Rust support in the Linux kernel and provided technical aspects of the feasibility of implementing Rust to combat problems arising from errors in working with memory. Google believes Rust is ready to join C as a language for developing Linux kernel components. The article also provides examples of using the Rust language for developing kernel drivers, in the context of their use in the Android platform (Rust is recognized as an officially supported language for Android development).

It is noted that Google has prepared an initial prototype of a driver written in Rust for the Binder interprocess communication

mechanism, which will allow a detailed comparison of the performance and security of Binder implementations in C and Rust. In its current form, the work has not yet been completed, but for almost all the basic abstractions of the kernel functionality required for the Binder to work, layers have been prepared for using these abstractions in Rust code.

<https://lkml.org/lkml/2021/4/14/1099>

<https://security.googleblog.com/2021/04/rust-in-linux-kernel.html>

PATCHES FOR RANDOMIZING LINUX KERNEL STACK ADDRESSES FOR SYSTEM CALLS INTRODUCED:

04/15/2021

Kees Cook, the former chief sysadmin of kernel.org and the leader of the Ubuntu Security Team, now working at Google on securing Android and ChromeOS, has published a set of patches that randomize kernel stack offsets when handling system calls.

Patches improve kernel security by changing the placement of the stack, which makes stack attacks much more difficult and less successful. The initial implementation supports ARM64 and x86 / x86_64 processors.

The essence of the proposed protection is in choosing a random stack offset at each system call, which complicates the determination of the stack layout in memory even if information about the addresses is received, since the base address of the stack will change at the next system call. Unlike the PaX RANDKSTACK implementation, in the patches proposed for inclusion in the kernel, randomization is performed not at the initial stage (cpu_current_top_of_stack), but after setting the pt_regs structure, which makes it impossible to use ptrace-based methods to determine a randomized offset during a long-running system call.

<https://lkml.org/lkml/2021/3/30/1180>

GOOGLE UNVEILS MULTI-LEVEL LRU PATCHES FOR LINUX:

04/15/2021

Google has released patches with improved implementation of the LRU engine for Linux. LRU (Least Recently Used) is a mechanism that allows you to discard or swap unused memory pages. According to Google, the current implementation of the mechanism for determining which pages to preempt creates too high a load on the CPU, and also often makes unfortunate decisions about which pages to unload.

In experiments carried out by the company, the new LRU implementation reduced the number of forced program terminations due to insufficient memory in the system (OOM kill) by 18%, in Chrome OS, the number of discarded browser tabs due to lack of memory decreased by 96%, and decreased by 59%. OOM kill number in loaded devices. This is the second version of the patches, where performance regression and other shortcomings noticed during testing are eliminated.

<https://lore.kernel.org/lkml/20210413065633.2782273-1-yuzhao@google.com/>

FIREFOX 90 WILL REMOVE SUPPORT FOR FTP:

04/16/2021

Mozilla has decided to remove the built-in FTP implementation from Firefox. The release of Firefox 88, slated for April 19, will disable FTP support by default (including setting browserSettings.ftpProtocolEnabled to read-only), and the Firefox 90 release, scheduled for June 29, will remove code related to FTP. When trying to open links with the protocol identifier "ftp://", the browser will call an external application in the same way as the "irc://" and "tg://" handlers are called.

The reason for the termination of FTP support is the lack of protection of this protocol from modification and interception of transit traffic during MITM attacks. According to the Firefox developers, there is no reason

today to use FTP over HTTPS to download resources. In addition, the FTP support code in Firefox is very old, creates maintenance problems, and has a history of identifying a large number of vulnerabilities in the past.

<https://blog.mozilla.org/addons/2021/04/15/built-in-ftp-implementation-to-be-removed-in-firefox-90/>

RELEASE OF LXQT 0.17:

04/16/2021

After six months of development, the LXQt 0.17 user environment (Qt Lightweight Desktop Environment) was released, developed by the joint development team of the LXDE and Razor-qt projects. The LXQt interface continues to follow the classic desktop organization, bringing a modern look and feel to enhance the user experience. LXQt is positioned as a lightweight, modular, fast and convenient continuation of the development of the Razor-qt and LXDE desktops, incorporating the best features of both shells. The code is hosted on

GitHub and licensed under GPL 2.0+ and LGPL 2.1+. Ready builds are expected for Ubuntu (LXQt is offered by default in Ubuntu), Arch Linux, Fedora, openSUSE, Mageia, FreeBSD, ROSA and ALT Linux.

<https://github.com/lxqt/lxqt/releases/tag/0.17.0>

CONSOLE FILE MANAGER NNN 4.0 AVAILABLE:

04/17/2021

The release of the nnn 4.0 console file manager has been published, suitable for use on low-power devices with limited resources (memory consumption is about 3.5MB, and the size of the executable file is 100KB). In addition to tools for navigating through files and directories, it includes a disk usage analyzer, an interface for launching programs, a file selection mode for vim, and a system for mass renaming of files in batch mode. The project code is written in C using the curses library and is distributed under the BSD license. Supported work in Linux, macOS, BSD-systems, Cygwin,

Termux for Android and WSL for Windows, in the form of a plugin for vim.

<https://github.com/jarun/nnn/releases/tag/v4.0>

ENDEAVOUROS 2021.04.17:

04/19/2021

EndeavourOS 2021.04.17 project has been published, which replaced the Antergos distribution. The distribution offers a simple installer to install a basic Arch Linux environment with the default Xfce desktop and the ability to install from the repository one of 9 generic desktops based on i3-wm, Openbox, Mate, Cinnamon, GNOME, BSPWM, Sway, Budgie and KDE. Endeavor OS allows the user to easily install Arch Linux with the necessary desktop without additional pre-installed programs. The size of the installation image is 1.9 GB (x86_64, ARM).

<https://endeavouros.com/news/our-april-release-is-available/>

OPENSSH 8.6 RELEASE WITH VULNERABILITY FIX:

04/19/2021

OpenSSH 8.6 has been published. It is an open implementation of a client and server for working with the SSH 2.0 and SFTP protocols. The new version fixes a vulnerability in the implementation of the LogVerbose directive, which appeared in the last release and allows you to raise the level of debug information dumped into the log. This includes the ability to filter by templates, functions and files associated with code executed with dropped privileges in the sshd process isolated in a sandbox environment.

An attacker gaining control of an unprivileged process with some unknown vulnerability can exploit the LogVerbose issue to bypass sandbox isolation and attack the process running with elevated privileges. The use of the LogVerbose vulnerability is considered unlikely in practice, since the LogVerbose setting is disabled by default and is usually only used during debugging. The attack also requires finding a new

vulnerability in an unprivileged process.

<https://lists.mindrot.org/pipermail/openssh-unix-dev/2021-April/039306.html>

NGINX 1.20.0 RELEASED:

04/20/2021

After a year of development, a new stable branch of the high-performance HTTP server and multi-protocol proxy server nginx 1.20.0 is out. It incorporates the changes accumulated in the main branch, 1.19.x. In the future, all changes in the stable 1.20 branch will be associated with the elimination of serious bugs and vulnerabilities. For ordinary users who do not have the task of ensuring compatibility with third-party modules, it is recommended they use the main branch, where the commercial product Nginx Plus is released every three months. According to a March report from Netcraft, nginx is used on 20.15% of all active sites.

<http://nginx.org/>

TETRIS-OS - YOU GUESSED IT:

04/21/2021

Tetris-OS is released, just for playing Tetris. The project code is published under the MIT license and can be used as a prototype for developing self-contained applications that can be loaded on hardware without additional layers. The project includes a bootloader, a Sound Blaster 16 compatible sound driver (can be used in QEMU), a set of music tracks, and a Tetris game variant. At a resolution of 320x200 pixels, graphics performance is provided at 60 FPS. To see it in action, go here: https://www.youtube.com/watch?v=FaLnmUYS_U

<https://github.com/jdah/tetris-os>

NODE.JS 16.0 JAVASCRIPT SERVER PLATFORM RELEASED:

04/21/2021

Node.js 16.0 is classified as a branch with a long support, but this status will be assigned only in October, after stabilization. Support for Node.js 16.0 will be carried out before April 2024. Maintenance of the previous LTS branch of Node.js 14.0 will last until April 2023, and the one before last LTS branch 12.0 until April 2022. Maintenance of LTS branch 10.0 will be discontinued in 10 days.

<https://nodejs.org/en/blog/release/v16.0.0/>

UNIVERSITY OF MINNESOTA SUSPENDED FROM LINUX KERNEL DEVELOPMENT AFTER SUBMITTING QUESTIONABLE PATCHES

04/21/2021

Greg Kroah-Hartman, who is responsible for maintaining the stable branch of the Linux kernel, has decided to disallow any changes coming from the University of Minnesota to the Linux kernel, and to roll back all previously accepted patches and re-review them. The reason for the blocking was the activities of a research group studying the possibility of promoting hidden vulnerabilities into the code of open source projects. This group has submitted patches that include bugs of various kinds. They observed community responses, and explored ways to trick the review process. In Greg's opinion, conducting such experiments to introduce harmful changes is unacceptable and unethical.

Other attempts by developers from the University of Minnesota have surfaced to make dubious changes to the kernel, including those related to the addition of hidden vulnerabilities.

<https://lkml.org/lkml/2021/4/21/143>

<https://cse.umn.edu/cs/statement-cse-linux-kernel-research-april-21-2021>

OPENVPN 2.5.2 AND 2.4.11 UPDATE:

04/22/2021

Bug fixes for OpenVPN 2.5.2 and 2.4.11. OpenVPN code is distributed under the GPLv2 license, ready-made binary packages are generated for Debian, Ubuntu, CentOS, RHEL and Windows.

The new releases fix a vulnerability (CVE-2020-15078) that could allow a remote attacker to bypass authentication and access restrictions to leak VPN settings. The problem only manifests itself on servers that are configured to use deferred authentication. Under certain circumstances, an attacker can force the server to return a PUSH_REPLY message with data on VPN settings before sending the AUTH_FAILED message. Combined with the use of the "--auth-gen-token" option or the user using their own token-based authentication scheme, the vulnerability could lead to gaining access to the VPN using a non-

working account.

As a non-security change, there is an increase in the output of information about TLS ciphers negotiated for use by the client and the server. Including added correct information about support for TLS 1.3 and EC-certificates. In addition, the absence of a CRL file with a list of revoked certificates during OpenVPN startup is now treated as a shutdown error.

<https://github.com/OpenVPN/openvpn/releases/tag/v2.5.2>

MICROSOFT BEGINS TESTING SUPPORT FOR RUNNING LINUX GUI APPLICATIONS ON WINDOWS:

04/22/2021

Microsoft has announced the beginning of testing Linux-based GUI applications in environments based on the WSL2 (Windows Subsystem for Linux), designed to run Linux executable files on Windows. Applications are fully integrated with the main Windows desktop, including

support for placing shortcuts in the Start menu, playing sound, recording from a microphone, OpenGL hardware acceleration, displaying information about programs in the taskbar, switching between programs using Alt-Tab, copying data between Windows - and Linux programs via the clipboard. Because, once you can do everything on windows, who needs Linux, right?

<https://devblogs.microsoft.com/commandline/the-initial-preview-of-gui-app-support-is-now-available-for-the-windows-subsystem-for-linux-2/>

UBUNTU 21.04 DISTRIBUTION RELEASE:

04/22/2021

Ubuntu 21.04 "Hirsute Hippo" is available, which is classified as an interim release, updates are available for 9 months (support will be carried out until January 2022). Installer images are created for Ubuntu, Ubuntu Server, Lubuntu, Kubuntu, Ubuntu Mate, Ubuntu Budgie, Ubuntu Studio, Xubuntu, and UbuntuKylin (China edition).

<https://releases.ubuntu.com/21.04/>

CHROME OS 90 RELEASED:

04/22/2021

Chrome OS 90, based on the Linux kernel, the upstart system manager, ebuild / portage build tools, open components and the Chrome 90 web browser, is out. The user environment of Chrome OS is limited to a web browser, and instead of standard programs, web applications are used, but Chrome OS includes a full-fledged multi-window interface, desktop and taskbar. Chrome OS 90 is available for most current Chromebooks. Source code is distributed under the free Apache 2.0 license.

https://chromereleases.googleblog.com/2021/04/stable-channel-update-for-chrome-os_21.html

OPENBSD ADDS INITIAL SUPPORT FOR RISC-V ARCHITECTURE:

04/23/2021

OpenBSD has made changes to the port implementation for the RISC-V architecture. Support is still limited by the OpenBSD kernel and still needs some work for the system to work properly. In its current form, the OpenBSD kernel can already boot into the RISC-V emulator based on QEMU and transfer control to the init process. Future plans include the implementation of support for multiprocessing (SMP), ensuring that the system is booted into multiuser mode, and the adaptation of user-space components (libc, libcompiler_rt).

<https://marc.info/?l=openbsd-cvs&m=161914575319702&w=2>

FIRST VERSION OF INFINITIME, FIRMWARE FOR OPEN PINE TIME SMARTWATCHES:

04/23/2021

The PINE64 open source community has announced the release of InfiniTime 1.0, the official firmware for the PineTime smartwatch. They say that the new firmware version makes the PineTime watch a product ready for end users. The list of changes notes a significant redesign of the interface, as well as an improvement in the notification manager and a fix for the TWI driver, which previously caused crashes in games. The InfiniTime firmware uses the FreeRTOS 10 real-time operating system, the LittleVGL 7 graphics library, and the NimBLE 1.3.0 Bluetooth stack. The firmware loader is based on MCUBoot. The firmware can be updated via OTA updates transmitted from the smartphone via Bluetooth LE.

<https://www.pine64.org/2021/04/22/its-time-infinity-1-0/>

TOARUOS 1.14:

04/23/2021

ToaruOS 1.14 is available, a Unix-like operating system written from scratch with its own kernel, bootloader, standard C library, package manager, user-space components, and a graphical interface with a composite window manager. At the current stage of development, the capabilities of the system is sufficient to run Python 3 and GCC. The project code is written in C and is distributed under the BSD license. A 14 MB live image has been prepared for downloading, which can be tested in QEMU, VMware or VirtualBox.

<https://github.com/klange/toaruos/releases/tag/v1.14.0>

KUROKO 1.1 PROGRAMMING LANGUAGE:

04/23/2021

Kuroko 1.1 language adds support for async and await, implements multithreading, improves compatibility with Python 3, implements support for multiple value assignments, expands the means for writing C handlers, adds support for type annotations for functions, adds the keywords "yield" and "yield from", integrated os, dis, fileio, and time modules, implemented new methods in str, list, dict and bytes, added support for precompilation into bytecode, whew! They also changed the license to MIT (previously it was a combination of MIT and ISC).

<https://github.com/kuroko-lang/kuroko/releases/tag/v1.1.0>

GEARY MAIL CLIENT 40.0 RELEASED:

04/23/2021

The Geary 40.0 mail client has been released for use in the GNOME environment. The project was originally founded by the Yorba Foundation, which created the popular Shotwell photo manager, but development later fell into the hands of the GNOME community. The code is written in Vala and is distributed under the LGPL.

The goal of the development of the project is to create a product rich in capabilities, but at the same time extremely easy to use and consuming a minimum of resources. The email client is designed for both standalone use and work in conjunction with web-

based email services such as Gmail and Yahoo! Mail. The interface is implemented using the GTK3 + library. The SQLite database is used to store the message database, and a full-text index is created to search the message database. To work with IMAP, a new library based on GObject is used that works in asynchronous mode (operations for downloading mail do not block the interface).

<https://gitlab.gnome.org/GNOME/geary/-/tags/gnome-40.0>



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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.

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Author: **Robin Catling**

Publisher: Proactivity Press

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Amazon US link:

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

Kobo:

<https://www.kobo.com/us/en/ebook/the-virtualbox-networking-primer>



I am doing this tutorial on a craptop with tiny speakers. This may sound different on a PC with great sound. Don't be afraid to adjust the key that the tutorial is in. Simply press ctrl+a then drag all your notes up or down.

In the last issue, we had our first part of our remix down. You saw how it took shape, even when the individual notes and tracks sounded like they did not belong. You saw a little 'reverb' go a long way. You saw how to slice 'n dice a pattern.

Before we continue messing with our song, I want you to think about a lot of modern songs. There is usually a build-up of some kind before the melody starts. Off the top of my head, think of Kate Ryan's Ella elle l'a mmmm Kate Ryan... Sorry, got carried away. As the song starts, there is like a noise build-up, that sounds like white noise, quickly increasing in volume. If you don't know what I am referring to, here is a refresher:

<https://www.youtube.com/watch?v=hdJN0ss7jA0> - we will now be adding the second part of the melody today as well as a build-up.

Since we are making a remix, the sky is the limit. Okay, open your project from the last issue. Find and drag the harpsichord into your song editor. Wait, what? Yes, we are going to have some fun? Bach to the future!!! This may seem like a bad idea, but roll with it. Harpsichord has an 'ugly' metal-feel to it, and that is just what we need to fit with our industrial theme. Click on the word "harpsichord01.ogg" to open the instrument's general settings. Click on ENV/LFO. Let us 'soften' the instrument a bit (set all three "volume", "cutoff", "reso".) Bring 'DEC' down slightly, bring 'REL' down slightly, and increase 'AMT' to the max. Bring its volume down to about 20%. See (Fig.1); *Unmodified is on the left. There is a method to the madness; by changing the volume as well, it becomes green, so, when I open it, I can immediately see which ones I have edited. Now open the piano

roll for the instrument. In the original song at about one minute fifty seconds (1:50), there is a little riff that plays at a higher pitch. See if you can recreate it. If not, don't despair, simply see (Fig.2 - next page). The pattern is simply repeated twice with a slight 'twist'

at the end of the second repeat.

Let's create that "intro" to our tune. Drag the 'breath01' instrument to your song editor. Click on the name to bring up the general settings and click the reversed 'R' to reverse your



sample. The second knob is the starting point. Adjust it just past halfway. We don't want to wait forever for our sample to start playing. Now go to ENV/LFO and - their AMT knob to maximum.

Now we open the piano roll and paint our note at precisely C5. There is a catch here. The higher the note goes, the shorter it gets. At C5, the note lasts precisely one bar (well, it does on my system). Which is what you need to glide into the tune. Feel free to shorten or lengthen your sample if you



FIG.3

don't seem to get this working. I will include a picture of mine (fig. 3).

Now select all of your music in your song editor and drag it one block to the right. This open space is where the one note of breath fits in (fig.4).

Intro... Check (fig.4)

How are you doing so far? Keeping up? Great! Now I want you to copy-and-paste what you have to



FIG.4

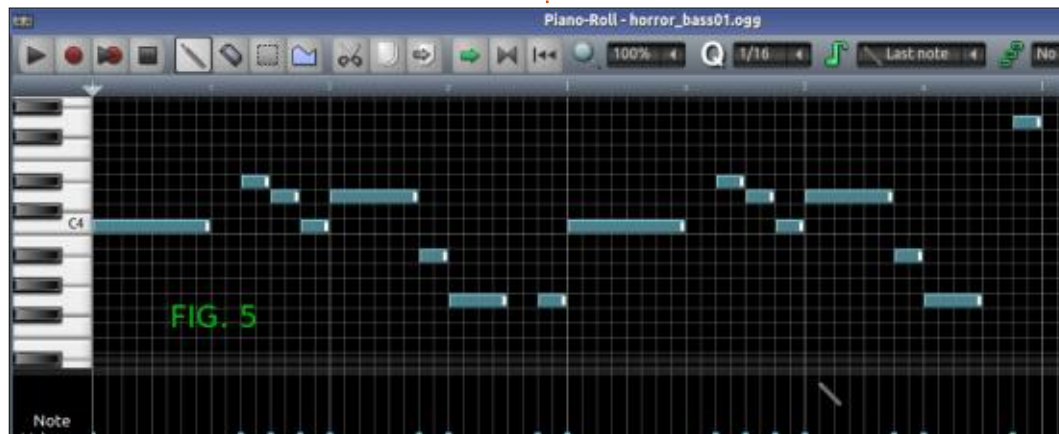


FIG.5

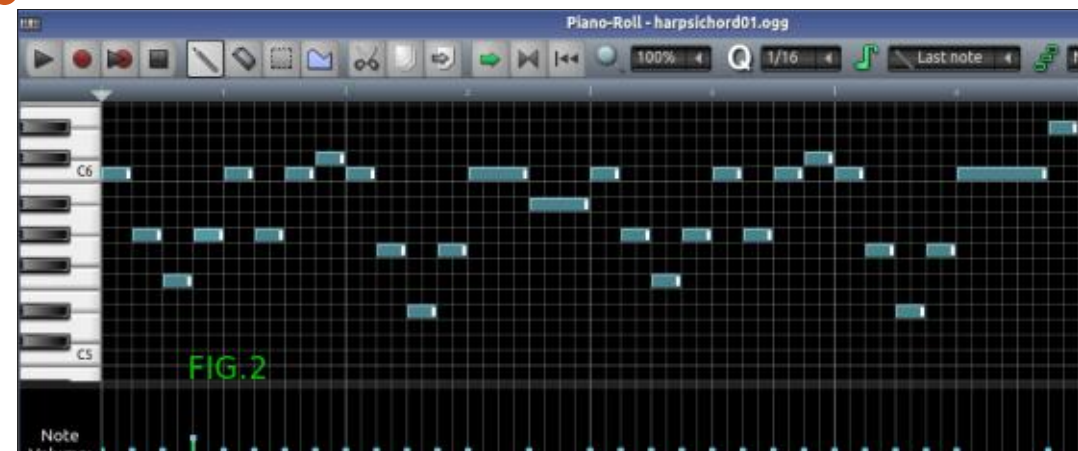


FIG.2

finish the song. We will put the finishing touches on what we have - after you have done that. So if you completed the task of filling in

the entire song, you may have noticed that something seemed off. That is because, in the second stanza, the pitch shifts one octave up. That means it went from c4 to c5. There are also minor changes to accommodate this and draw your attention to it. If you compensated by just moving your notes up, well done!

If you look at the loop bar (the ruler on top), the issue is at about thirty seven (37). I have included mine as a screen shot, but if you like yours more, stick with that (fig. 5). Then, around forty-one (41), for the next two "four-blockers", you can copy mine that is one (to C5) key up (fig.6). I also expanded my 'snaps' all the way to the beginning. There is a lot of copy / pasting going on here, but it is because a melody and chorus get

repeated several times in the duration of a normal song. You can not just repeat the same thing over and over, you need to zhuzh it up. For example: Let us take the second high pitched riff in this song, because it is a 'remix' we are making, we have some artistic license. Open your harpsichord and go to FUNC. Turn on ARPEGGIO, and change the direction to 'down' and the mode to 'sort'. Try to set the time button as close to 333 (mine is at 332) as you can. Now, when you play the riff, there is almost another note in, after every third one, and there is some artistic style added without you having to think about it! The main melody is still there and is still recognisable,

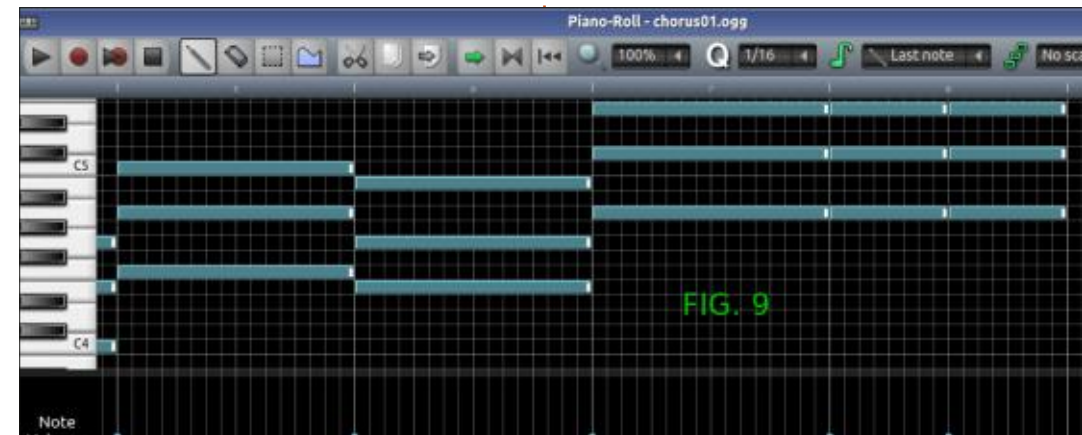
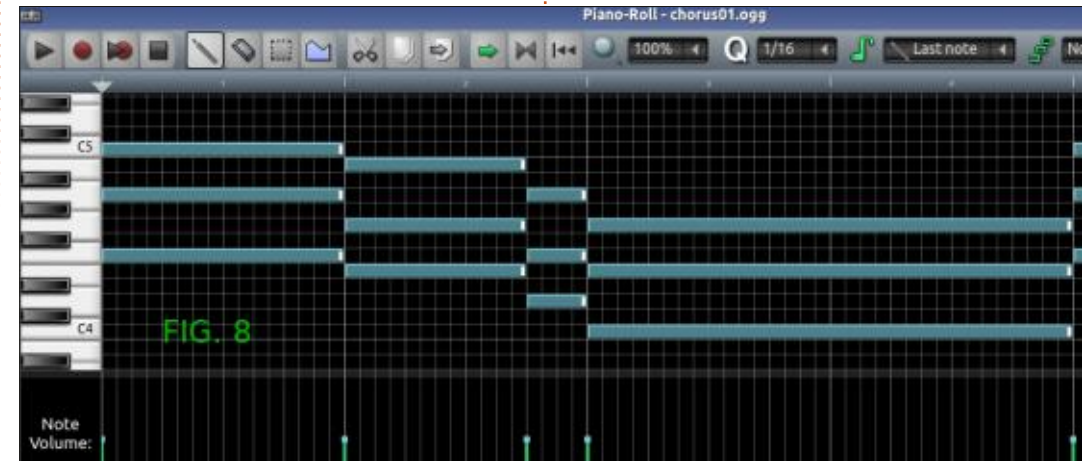
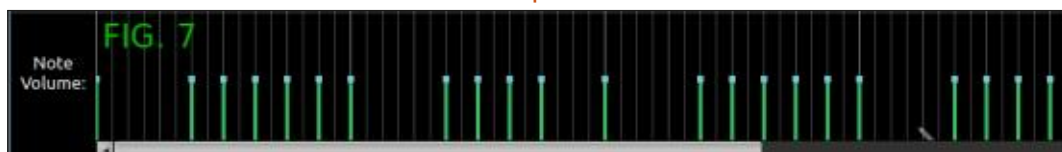
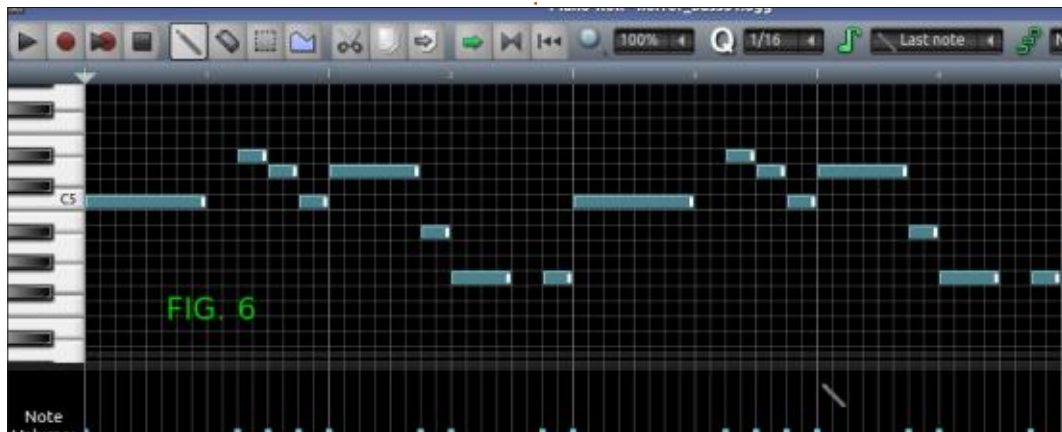
but you have now added your own spin without adding a note yourself.

At the end of the tune, you will hear a long sustained note, and the tune from the beginning playing over it. The drums end in a cymbal smash. As an exercise, I am going to let you go through the instruments to find a compatible cymbal sound. This will help you get familiar with your instruments. You can also create your own sounds with the triple oscillator, but that is another tutorial. As our tune is rough, I will help you smooth out the transitions and harmonies. We do not want to lose our 'crunchiness', but we want our tune to sound a

bit more professional. When I say this I don't mean for you to copy everyone else; be an individual, blaze across the sky like a shooting star!

Now that we are done with the instruments, so to speak, let's add some voices. If you want to sing the song, be my guest, however... I want to add some background "aaahs". Yes, I know we went past ten instruments, but when I started

this tutorial, I wasn't going to make the tune so full, I was just planning on teaching you the basics with a beat, base, clap, hat, organ, and some automation. Now I am aiming to take you a little further. Grab chorus01 from the instrument panel and drop it in your song editor. (Do not double-click it, as that adds it to the beats & bassline editor). Add maximum reverb to it. (By now, you should know how. HINT: c*2x2). Now, according to the



manual, we need to change the note type to “last note” (truth: Chord/scale/note - at the top of the piano roll has never made any difference in the songs I make). This pattern is going to fall over two screenshots as well (fig8 & fig 9). Our chorus now harmonizes with the tune. We will cover scales and chords in another issue. Bring the chorus volume down to 20-25%. These will fit in nice & snug below the first ‘riff’ that repeats three times (fig.10).

Now that we have touched on so many subjects, I need to point out something very obvious. So far we have been working with notes that are all the same volume. You may have adjusted the volume in the song editor or the note editor. Just know, you have full control over each note inside the piano roll. Below the piano keys in the piano roll, you will see the words “note volume” or “note panning”. Clicking the one, will change it to

the other. The green stalks with the cyan dots are the individual note volumes. You can adjust a row of notes, simply by dragging over them. This works like someone playing the piano, if you have noticed them stepping on the pedals. Remember, in any piece, some notes are played louder than others. Though not always detectable, you can immediately hear the absence thereof (fig.7).

There is one thing I did not

mention, and that is the FX-mixer. Though we did all our instruments to channel 0 (MASTER), it is generally a bad idea. We can go there in the next tutorial, I just did not want to overload you. We can then look at automation and how to control clipping in your songs. All in the FX-mixer.

This is where I leave you. You have 90% of a gritty, grimy remix of a simple tune. How you finish it depends on your taste in music. Change the tempo of the tune if you like. Turn it into Dubstep. The limit is your imagination! Use what I have taught you, and next time we will look into more topics, when we remix something completely different.

Do you have a suggestion as to what we should remix next? E-mail us on: misc@fullcirclemagazine.org



FIG. 10



As many of you know or have at least heard, Python 3.10 is well on its way. According to python.org (<https://www.python.org/dev/peps/pep-0619/>), the final date for release is slated for October 4, 2021 with feature freeze scheduled for May 3, 2021.

Here is the release schedule as of April 2021:

- 3.10.0 alpha 7: Tuesday, 2021-04-06
- Expected:
- 3.10.0 beta 1: Monday, 2021-05-03 (No new features beyond this point.)
- 3.10.0 beta 2: Tuesday, 2021-05-25
- 3.10.0 beta 3: Thursday, 2021-06-17
- 3.10.0 beta 4: Saturday, 2021-07-10
- 3.10.0 candidate 1: Monday, 2021-08-02
- 3.10.0 candidate 2: Monday, 2021-09-06 (if necessary)
- 3.10.0 final: Monday, 2021-10-04

Just because we have over 5 months before the actual release is due, that doesn't mean that you

can't start getting prepared and excited about the upcoming new version. Some of the changes that are supposed to be coming are:

- PEP 604 – Allow writing union types as X | Y
- PEP 612 – Parameter Specification Variables
- PEP 626 – Precise line numbers for debugging and other tools
- PEP 597 – Add optional EncodingWarning
- PEP 618 – Add Optional Length-Checking To zip
- PEP 644 – Require OpenSSL 1.1.1 or newer
- PEP 632 – Deprecate distutils module
- PEP 613 – Explicit Type Aliases

And I've saved the best for last -

- PEP 634, PEP 635 Structural Pattern Matching

Each of the new features that are listed above have the PEP (Python Enhancement Proposals) numbers with them so you can easily do a web search for the ones you are interested in exploring. For the rest of the article, I will be discussing the new Pattern Matching feature. If you want to try out any of these things, hopefully you have pyenv installed. That way you can simply do a pyenv install 3.10-dev to play with version 3.10. There are other ways to try out 3.10, but honestly pyenv is the way to go! If you would rather check out another way, try looking at <https://towardsdatascience.com/all-the-important-features-and-changes-in-python-3-10-e3d1fe542fbf> and search for "Installing Alpha/Beta Version".

They provide a way to load version 3.10 alongside your existing Python version(s).

PATTERN MATCHING

You might be wondering why I'm making such a point to talk about this single item. Well, a small history lesson is in order here.

For many years, programmers have been asking for Python to support Select Case (VB) or Switch Case (C#) type statements. They have been saying that it makes code much easier to read. An example of such a statement in Visual Basic would be something like this (below).

Each time the subject has come

```
Select Case number
Case 1 To 5
    Debug.WriteLine("Between 1 and 5, inclusive")
    ' The following is the only Case clause that evaluates to True.
Case 6, 7, 8
    Debug.WriteLine("Between 6 and 8, inclusive")
Case 9 To 10
    Debug.WriteLine("Equal to 9 or 10")
Case Else
    Debug.WriteLine("Not between 1 and 10, inclusive")
End Select
```

up, those who make decisions about Python have said that there is no need for that. The standard if | elif | else structure works just fine (below).

While the Visual Basic structure might look a bit more efficient, both are (in my humble opinion) equally easy to read. That having been said, I came from a Visual Basic background and I have to admit that when I was first learning Python, I too wondered why such a simple solution like the Select Case type testing wasn't supported. However, I got over it and learned the Python way.

Python 3.10 introduces something called Structural Pattern Matching. At first glance, it is the same thing as the Select Case for VB and Switch Case for C#. Here's the same code as above, but done with the Pattern Matching. (Top right. By the way, this won't work without being in

```
if 1 <= number <= 5:
    print("Between 1 and 5, inclusive")
elif 6 <= number <= 8:
    print("Between 6 and 8, inclusive")
elif number == 9 or number == 10:
    print("Equal to 9 or 10")
else:
    print("Not between 1 and 10, inclusive")
```

```
def check_number(number):
    match number:
        case 1 | 2 | 3 | 4 | 5:
            print(f"{number} is between 1 and 5, inclusive")
        case 6 | 7 | 8:
            print(f"{number} is between 6 and 8, inclusive")
        case 9 | 10:
            print(f"{number} is equal to 9 or 10")
        case _: # if none of the above matches. Sort of 'else'
            print(f"{number} Not between 1 and 10, inclusive")
```

```
for i in range(0, 12): # get numbers between 0 and 11
    check_number(i)
```

Python 3.10.)

When it runs, it returns:

```
0 Not between 1 and 10, inclusive
1 is between 1 and 5, inclusive
2 is between 1 and 5, inclusive
3 is between 1 and 5, inclusive
4 is between 1 and 5, inclusive
5 is between 1 and 5, inclusive
6 is between 6 and 8, inclusive
7 is between 6 and 8, inclusive
8 is between 6 and 8, inclusive
9 is equal to 9 or 10
10 is equal to 9 or 10
11 Not between 1 and 10, inclusive
```

Honestly, in this example, it

doesn't look that much better than the Python if | elif version. That's because while you can do simple things, there is no pattern to match in that case, really.

On the other hand, let's look at an example of how to make this new functionality really shine. We'll throw together a really limited and simple text adventure game. Surely you remember those, unless you are younger than 30 years old or so.

The typical text adventure drops the player in the middle of a forest (usually after a night of enjoying copious amounts of adult beverages), or into a dark room inside of a castle. Since Ronnie is Scottish and both sides of my family tree shares that same root, I'll pick the first option for our adventure.

We'll make our player a male human (since we all know that female humans are smarter than to enjoy copious amounts of adult beverages, right?).

Now, our player is in a forest with a bit of a headache. There are only four directions that he can move; North, West, South and East. We will assume that the paths available to him won't normally run him into a tree. I mean, he already has a hangover – let's not make it any worse. Scattered throughout his journey, he will stumble over things like a sword, an axe, some gold, some silver, some diamonds, flint and steel to start a fire, and so on. I won't be nice enough to let him find some aspirin, just because he should suffer some for his evening's indulgences. He also will possibly run into a monster or two.

```
global game_objects, possessions
game_objects = ['Axe', 'Hammer', 'Sword', 'flint',
               'steel', 'gold', 'silver', 'branch', '']
possessions = ['bag of stuff']
```

Now that we've defined his world somewhat, let's start looking at writing some code. We'll need to create a couple of lists to handle the objects in the game that the player can deal with and to "hold" the items he's picked up (above).

Our main loop (below) will be fairly simple. As long as the `game_running` variable is `True`, then we will continue to loop. At the top of the loop, we ask the user what they want to do and get their response. We send that to the function `work_command`.

Inside the `work_command` function, we will use the new `match case` function. We'll start pretty simply (top right).

I've defined the global variables here that I think might be used. When we start the `match case` section, we set the `match`

```
game_running = True
while game_running:
    response = input('What would you like to do? -> ')
    work_command(response)
```

statement to look at the command that has been split apart with the `.split()` command. This way, the `case` statements can look for commands like "quit" as well as "go North" and even things more complicated like "get Axe". Let's add another case for moving towards the North.

```
case ["North"] | ["go",
"North"]:
    message = "Ok.  Going North"
    print(message)
```

So in this case (no pun intended), if the user enters the command "North" or "go North", it will fall into the above case. This allows us to handle multiple options.

However, we can even get more complex. In the next version, we can mix the "go" command with an set of directions that will allow us

```
def work_command(command):
    global directions, items, monsters, possessions, this_location,
game_running
    global north_count, south_count, east_count, west_count
    match command.split():
        case ["quit"]:
            print("Goodbye!")
            quit_game()
```

```
def work_command(command):
    match command.split():
        case 'go', 'North' | 'South' | 'East' | 'West' as
direction:
            match direction:
                case 'North':
                    print('Moving North')
                case 'South':
                    print('Moving South')
                case 'East':
                    print('Moving East')
                case 'West':
                    print('Moving West')
            case 'go', *wth:
                print(f'{wth} is not supported')
```

to encapsulate the go command with a direction, use the pattern of 'North' | 'South' | 'East' | 'West', assign that to the variable `direction`, and test that to handle any of the four options.

Then at the bottom of the test for the four directions, we can make a test, just in case the player decided to get cute, and enter something like "go Up". The `*wth` wildcard will catch anything that isn't part of our four directions.

We also can handle things like this (next page, top left).

In this instance, the user can type "get Axe" or "pick up Sword" or even "pick shovel up". So when the program hits this part of the code, the object is then added to the players "bag o' infinite stuff" by the `append` command. When the player wants to see the contents of his bag, he just enters "inventory" which displays the contents of the list.

```
case["get", obj] | ["pick", "up", obj] | ["pick", obj, "up"]:  
    if obj in game_objects:  
        print(f"Pick up {obj}")  
        possessions.append(obj)  
    else:  
        print(f'I do not see the {obj}')  
case["inventory"]:  
    print('~'*25)  
    message = f'You currently have {len(possessions)-1} object(s) in your bag:'  
    print(message)  
    for pos in possessions:  
        print(f'    {pos}')  
    print('~'*25)
```

Pick up Axe

```
~~~~~  
You currently have 1 objects  
in your bag:  
    bag of stuff  
    Axe  
~~~~~
```

I have to be honest with you, the examples that I have provided here only scratch the surface of the Structural Pattern Matching feature and are very simplistic. For more information and examples, you can check out the following web sites...

<https://www.python.org/dev/peps/pep-0636/#adding-conditions-to-patterns>

<https://mathspp.com/blog/pydonts/pattern-matching-tutorial-for-pythonic-code>

As things get a bit further along with the beta version, I'm sure you will see a large amount of web information about all of the version 3.10 features – especially the Pattern Matching feature.

I'll put the Python code that I provided in the article on my github repository at <https://github.com/gregwa1953/FCM-168>, and I'll make the text adventure game code closer to usable as a skeleton for you if you want to learn.

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.thedesignatedgeek.xyz.



HOW-TO

Written by Erik

Latex - Pt.2

Website: <https://www.latex-project.org/>

Prerequisites: A willingness to learn.

Target audience: N00bs

You may ask, "Why another Latex tutorial when there are so many Youtube videos?" And my answer would be, after watching countless outdated videos that were badly planned, and badly executed, and gave me no answers, THIS tutorial was born. I am no expert; this is what I wish the tutorials actually taught me.

When it comes to typesetting, LaTeX is the undisputed champ. It outweighs its opponents in the sheer number of options alone. At first, LaTeX is a bit confusing and difficult to use. Not to scare you, but I suggest looking here: <http://tug.ctan.org/info/symbols/comprehensive/symbols-a4.pdf>

However, our intent with these tutorials is to help you unravel its mysteries and become a wizard at your Ubuntu computer. To help you get there, TeX studio is our IDE of choice. An IDE is a helper tool, nothing more. You actually do not

even need it, but it makes things a lot easier. So fire up Tex studio, click the new tab button, and let's get started. (If this seems foreign to you, see last issue).

This is where I left you last issue. Which is fine and well for a cover page, but you may want to break up your writing into sections, so let's do just that. You can simply add a "/section" identifier and that will be the heading of your section. See, it's not as crazy as it first seems.

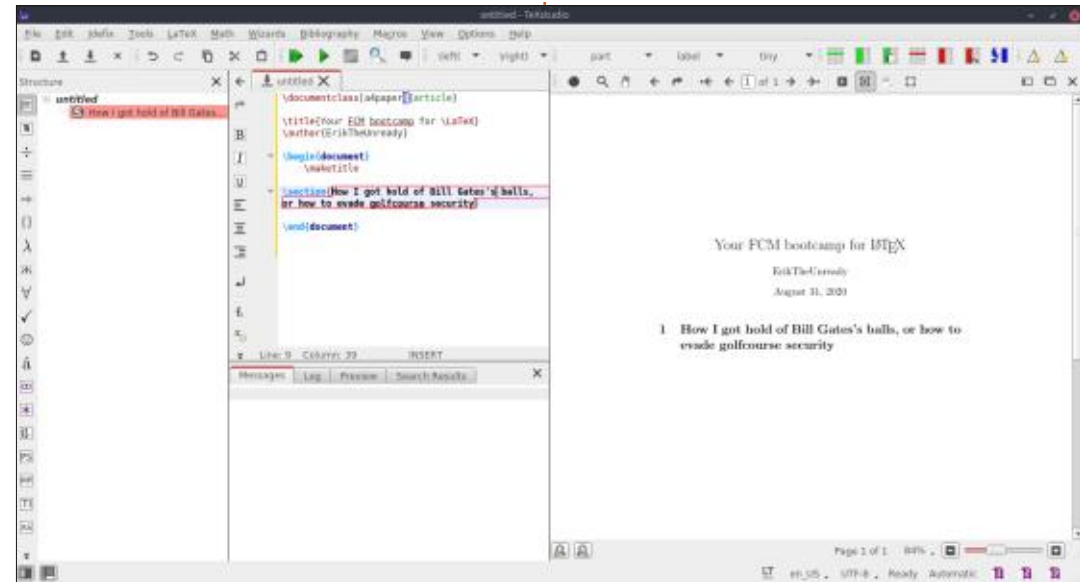
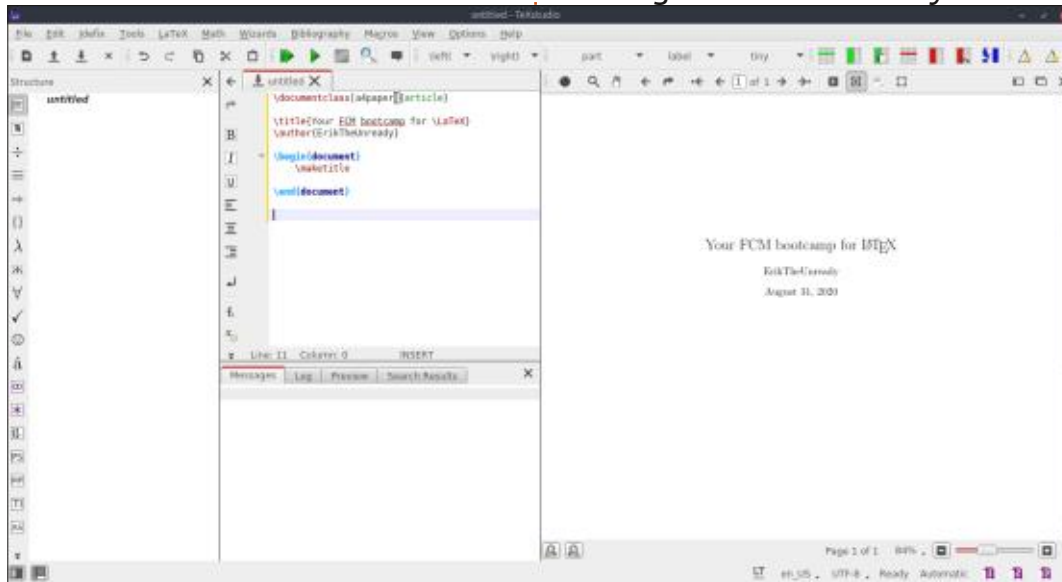
If you missed our last issue, it is available to download in the back

issues section:

<https://fullcirclemagazine.org/downloads/>

You can make as many sections as you like. Try it now. You can even copy-paste them if you like.

As you add sections, you will see them in the left-most pane in a tree view. This can be handy for writers wanting to keep their scenes or chapters together. If you used the auto-complete function, you may have noticed there was more than one 'section'. If you added more sections, you may have noticed that they were numbered.



HOWTO - LATEX

If you would not like them numbered, you choose the option with the '*', or you can simply insert a star in front of the curly braces.

Here is our 'code' so far:

```
\documentclass[a4paper]{article}

\title{Your FCM bootcamp for \LaTeX}
\author{ErikTheUnready}

\begin{document}
\maketitle

\section{How I got hold of Bill Gates's balls... or, how to evade golf course security}

\section{Autographs in the rear}

\section*{Disguises you need to wear}
```

`\end{document}`

So far we have done nothing difficult to remember or difficult to grasp. The same is true for making subsections. It is simply `\subsection{}`

Go on, make a few, we know you want to. The same principle applies here regarding the '*' before your curly braces.

Say you want a subsection of a subsection, then you need to use the `\subsubsection{}` command. So far, so good. Now the odd one; it's the `\paragraph{title}` - this will not make a paragraph, but a highlighted title, before your next sentence. Go ahead and try that now. To make a paragraph, you still need to do it in the old fashioned way.

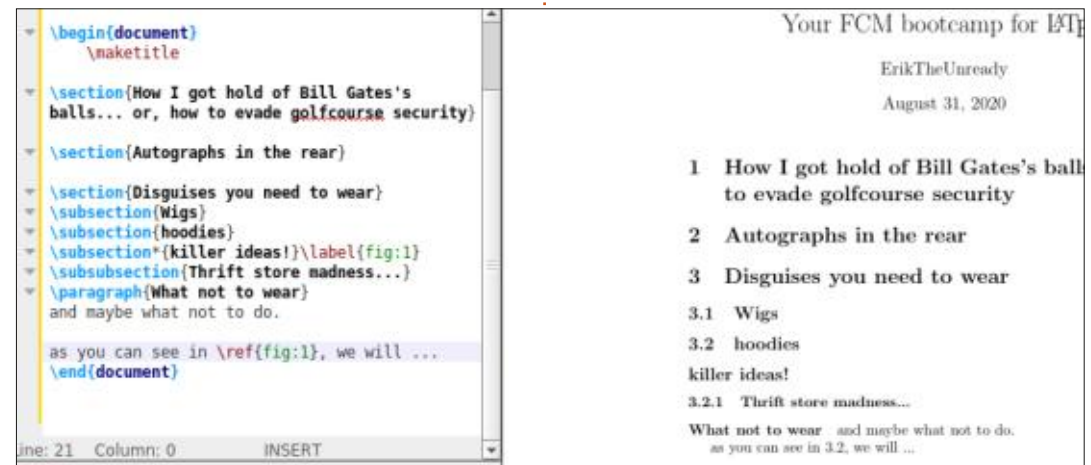
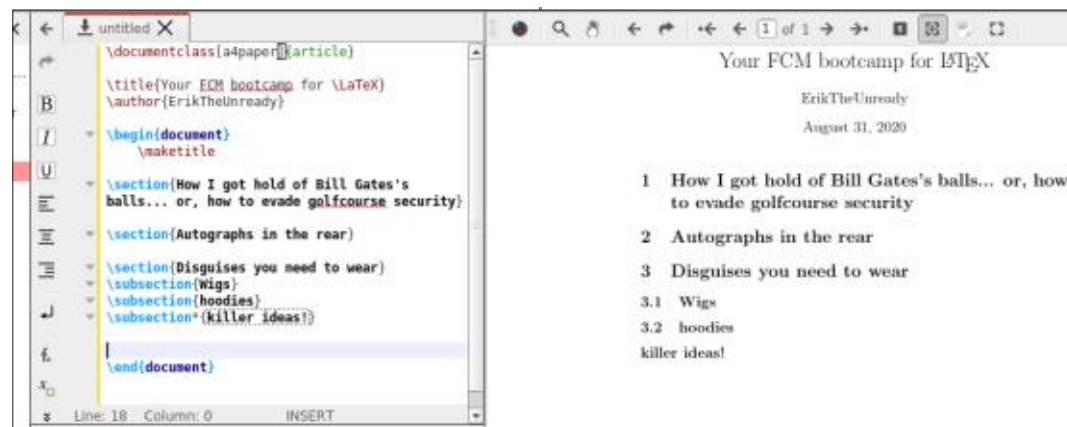
If you listen to a lot of music, you will know what I am talking about when I use the word "tags". When making a latex document, you will often put pictures in. You can "tag" these with a label, like 'figure1' or 'fig:1'. These types of labels are not seen, but searchable. You can now reference this figure (fig:1) you tagged from anywhere in the document and it will always match up. Yes, even though this is a section. (We will get to images later). Instead of fig for figure, you can use sec: for section. You use the `\ref` command to reference a label you created.

As you can see in our example, our label is under heading 3.2 now, but if I were to add a section before that, the pointer will now

point to 3.3 or whatever it becomes. The key name does not matter, but it is good to stick to something standardised. The key: `\label{pinkmoonmonkeys}` - is just as valid as our example. Go ahead and tag a section with a label.

Moving along. If you want to insert a text symbol that was not on your keyboard, you can do so. For example `\textdollar` will insert the dollar symbol. I suggest doing a search in the comprehensive symbols list as there is no way you will remember them all. Just remember the format: `\command[option]{argument}`

If the symbol is already on your keyboard, just like in BASH, you need to escape the character.



```
\documentclass[a4paper]{article}

\title{Your FCM bootcamp for \LaTeX}

\author{ErikTheUnready}

\begin{document}

    \maketitle

\section{How I got hold of Bill Gates's balls... or, how
to evade golf course security}

\section{Autographs in the rear}

\section{Disguises you need to wear}
\subsection{Wigs}
\subsection{hoodies}
\subsection*{killer ideas!}\label{fig:1}
\subsubsection{Thrift store madness...}
\paragraph{What not to wear}
and maybe what not to do. \textdollar
however you can escape those characters on your keyboard \
$100 yes?

as you can see in \ref{fig:1}, we will ...
\end{document}
```

Here is our 'code' so far, you can copy to see it in action:

I want you to notice spaces. What caught your eye? Answers to: misc@fullcirclemagazine.org

Unlike a word processor, we do not see Bold or Italic in the menu. My suggestion to newbies is to type \text in the IDE, and wait for the dropdown menu and scroll through that. To emphasise something, use /emph.

TIP: beware of using /emph as an option to something like a section, as it will move the word onto a new line.

We have choices of \textit and \textsl – italics and slanted text. You can even try \textsc to change the word to small caps. Note that bold is \textbf for bold font. The catch comes when you need more

than one option. What do you do? This problem is taken care of by nesting. We 'nest' our commands inside each other.

Open a new window with CTRL+N or click the 'new' button and enter the following:

```
\documentclass[a4paper]
{article}
\begin{document}
Let us emphasize some
\emph{emphasized text}.

Commands can be
\textsl{\textbf{nested}}.
\emph{Note how
\emph{emphasizing} changes
when nested.}

\end{document}
```

Compile and preview this new document. Notice how each command is 'nested' in its own curly braces inside the other command's curly braces (see image below).

So what did we learn in this issue?

1. a '*' can negate automatic numbering.

Let us emphasize some *emphasized text*.
Commands can be *nested*. Note how *emphasizing* changes when *nested*.

2. When you refer to something, rather tag it with a \label
3. You can insert symbols, but also escape them.
4. We can nest commands.
5. Some things change, depending on their location.

Is Latex becoming less cryptic? Did we make a mistake? Know of a better way? Then we would like to hear from you –

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 Jon Hoskin

Process & Tools For Making Special Editions

Although the purpose of this article is to explain how I make Full Circle Magazine special editions, once learned the various tools can be used for other purposes. Overall, it's mostly a PDF for newbies tutorial using the free tools installed on my *Kubuntu* laptop. I have used several of these techniques to make PDF group directories and advertisement brochures.

The initial step is to extract needed pages from the appropriate Full Circle Magazine (or other PDF). To do this, I use **PDF Mod** version 0.9.1 by right-clicking on the FCM edition of interest and selecting Open With > PDF Mod.

You will probably want to resize the PDF Mod application to maximum, and then, using the slider on the bottom right, increase the individual page size to allow for correctly selecting needed pages. In the example I selected only the title page, but you can right-click using the Ctrl and/or Shift keys as needed to highlight all appropriate pages. Right-clicking on the

selected page(s) will give you the option of extracting the pages needed. (In some cases, removing unwanted pages might be simpler.)

I used **Flameshot** version 0.83-2 to capture the included graphics, although I am not a big fan. Note

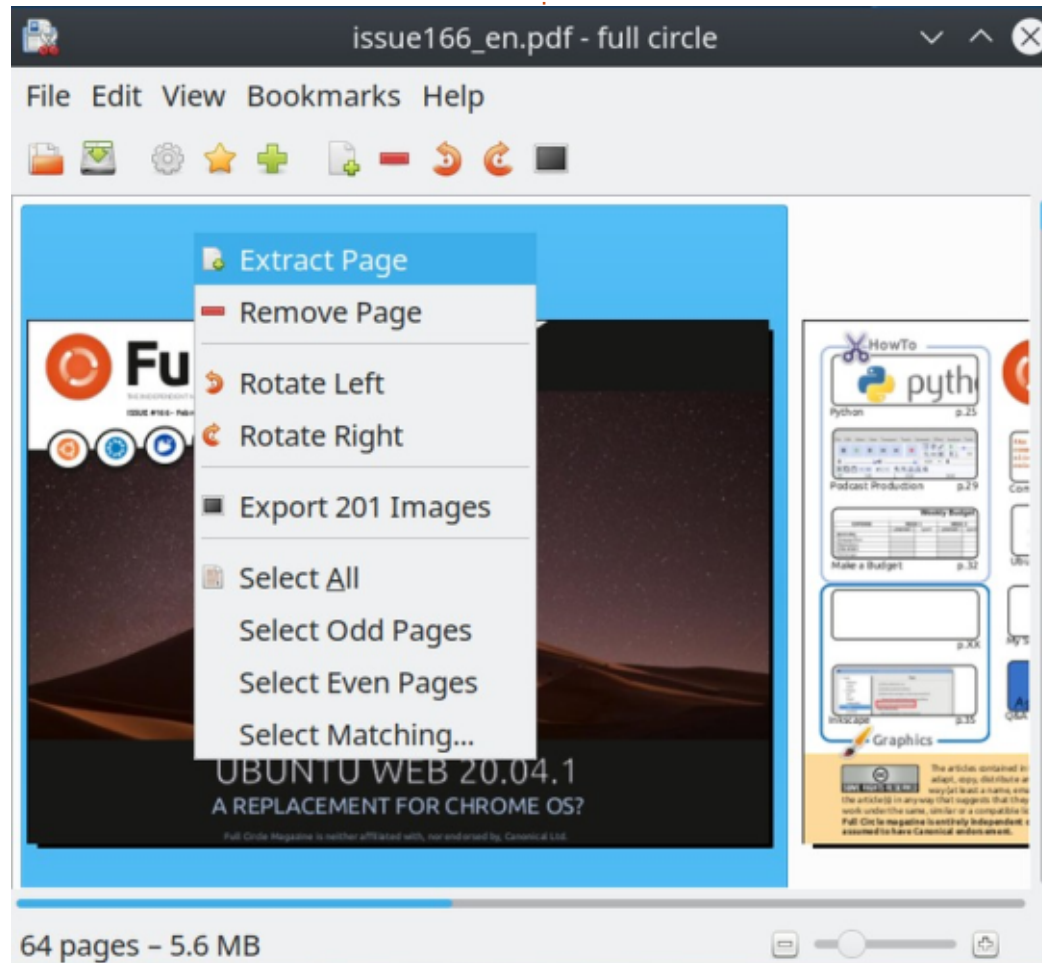
that you will want to use the delay option – if showing selected choices on applications is important. I used **gThumb** version 3.8.0 to crop and scale images rather than the larger Gimp.

Extracting the selected page(s)

brings up another window containing only the selected pages. Various options exist but, likely, you simply want to save the page(s) as a new PDF. PDF Mod automatically suggests a name for the PDF that's about to be created; it has worked fine for my purposes. Save it to an appropriate folder.

For a one-off or very limited purpose, you could add additional pages in PDF Mod by selecting File, then Insert from... and add the appropriate PDF(s). You can then move individual pages around within the open new PDF. In my workflow, I usually have more, or many more, than ten PDFs to combine, and I find it easier to use PDF Arranger to simply drag and drop the additional PDF files into a new PDF.

I add each PDF document, in chronological order. While as the name suggests, PDF Arranger allows you to move pages around in the document, like PDF Mod, it's only one page at a time. The resulting file can then be saved. Subject content is, at that point,



HOWTO - MAKING SPECIAL EDITIONS

complete – but two other issues remain.

Both the front or title page, and the ending page, need to be created. This part is less well defined and has changed over time. Following that, because PDFs are generally significantly bloated, the file is compressed to make dissemination easier.

The title page has been the most difficult task. For previously made special editions like the first Python series, usually modifying the numbers on the existing page is the simplest option. Because they are not available as SVGs, and the PDFs are often not easy to modify, it can sometimes be a bit tedious to attempt to make it look and feel like the original FCM.

When no previous version exists, I try to create with **Inkscape**, so that I have an editable SVG version – even if I have to capture it as a PNG. I have used Gimp for that purpose on occasion. (If starting a new and unrelated magazine or series, I would try to stay with Inkscape and SVGs because future modifications are so much easier.) Both Inkscape and **LibreOffice** have come a long way as PDF

editors and are worth looking into for that purpose.

Most recently I have tried to use the page banners (for example: 'My Opinion' or 'Everyday Ubuntu') for new special edition topics which, while not as impressive as the FCM Front page, require significantly less effort. For the ending pages, I now use the last two pages of the most current FCM edition which includes the then most up-to-date Patron and How To Contribute information. Both the Front page

and ending pages can then be added using PDF Arranger or Mod. The title page will need to be moved to the top or front.

The final task is to compress the new PDF. Depending on its purpose, that may not be necessary, but email size limitations may require some compression. To do so, I make a new copy of the file named 1.pdf. I then open the terminal at that location and type in or copy one of the following command lines:

```
gs -sDEVICE=pdfwrite  
-dCompatibilityLevel=1.4  
-dPDFSETTINGS=/screen  
-dNOPAUSE -dQUIET -dBATCH  
-sOutputFile=1s.pdf 1.pdf
```

```
gs -sDEVICE=pdfwrite  
-dCompatibilityLevel=1.4  
-dPDFSETTINGS=/ebook  
-dNOPAUSE -dQUIET -dBATCH  
-sOutputFile=1e.pdf 1.pdf
```

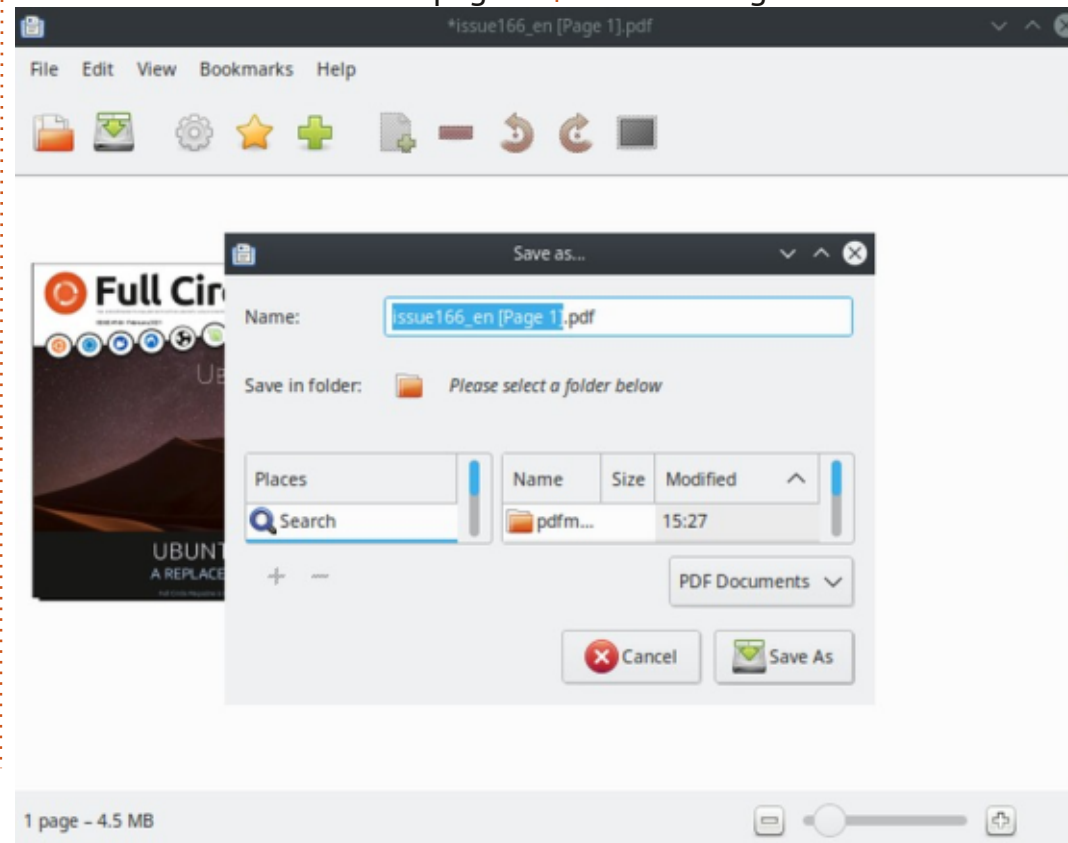
```
gs -sDEVICE=pdfwrite  
-dCompatibilityLevel=1.4  
-dPDFSETTINGS=/printer  
-dNOPAUSE -dQUIET -dBATCH  
-sOutputFile=1p.pdf 1.pdf
```

The input file 1.pdf gets converted to:

- 1s.pdf – the screen, or most compressed, or
- 1e.pdf – the ebook, or middle compression range, or
- 1p.pdf – the printer, or least compressed version.

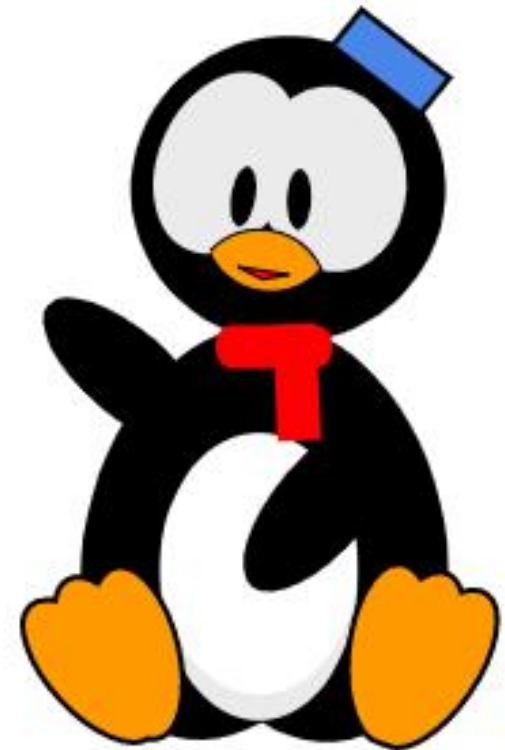
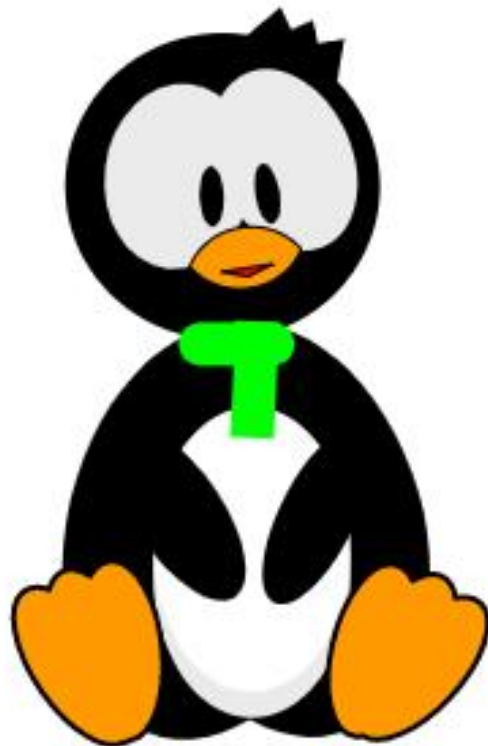
Compare the three types to determine what meets your specific needs. Renaming the resulting file completes the process.

Thanks to Ronnie for providing the above code and the general process when I first got started making Special Editions.



THE DAILY WADDLE

FENG SHUI? LOVE WHAT YOU
HAVE DONE WITH THE PLACE!





HOW-TO

Written by Mark Crutch

Inkscape - Part 108

This month, we'll conclude our dive into the new text features in Inkscape version 1.0 by looking at a pair of new font formats that are now supported (and one that possibly isn't). Although I've used the term "font formats", you won't find any new file extensions in use. These formats are implemented inside the standard OpenType Font (*.otf) files that are commonly used on modern computer systems. As such, you can't immediately tell if a font supports these new features from the file extension alone, but we'll look at a solution to that problem later.

COLORED FONTS

The first font variation to discuss is termed "SVG in OpenType", and it's pretty much what it sounds like. With these fonts, the shapes of the glyphs are defined using the SVG format, and then bundled into the OTF wrapper in order to benefit from many of the typographical capabilities that come with it.

Basic OTF fonts just define

shapes for each glyph, with no concept of color. The program that renders the fonts is responsible for filling or outlining the shapes to make them visible, often with a solid tone, but it could equally be with a gradient or pattern. The key point is that the font provides the path outlines, and the program draws those outlines as coloured objects. With an SVG in OpenType font, this choice is usually taken out of the application's control, with colors defined solely by the

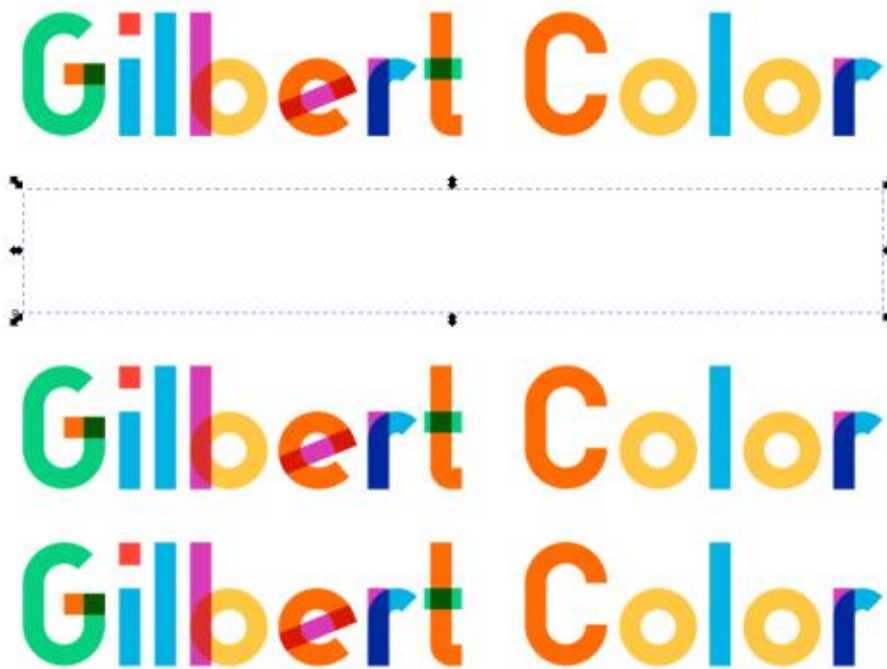
font itself. Let's look at an example.

You're probably familiar with the Rainbow Flag, used as an emblem of gay, lesbian and related communities. The man who originally designed it, Gilbert Baker, passed away in 2017. In his memory, a free color font was created which was inspired by the Rainbow Flag, and named Gilbert. Due in part to the fact that there are currently very few color fonts

in existence, and that even fewer are free of charge, this one is commonly used in articles about color font support in various browsers and other applications. This piece is no different, so here's a screenshot of Gilbert Color in action within Inkscape version 1.0:

The first thing to note is that it doesn't appear in color within the font selection drop-down, nor in the list in the Text and Font dialog. Neither is there any marker or indication that this is a color font, other than its name. It appears amongst all the other fonts in alphabetical order, rather than being separately grouped. This means that you'll need to keep track of the names of any color fonts you add to your system, as they won't always stand out obviously for selection in the UI.

The second thing to note is that it is, indeed, colorful. As is the case with many color fonts currently, the use of color is brash and obvious, rather than being used for subtle shadows or ornaments. But what happens if the colors used in



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the font aren't quite what you want to fit in with your own design project? Unfortunately the answer appears to be "tough luck".

In the previous image I have made four copies of the text, as follows:

- With a black fill and no stroke
- With no fill and no stroke
- With a red fill and thick blue stroke
- With no fill and a thick blue stroke

As you can see, removing both the fill and stroke causes the text to be transparent, but if any fill or stroke color is applied, then you get the colored font in exactly the colors that the designer intended, regardless of the color you apply.

If we can't change the colors in the font using the normal fill and stroke, perhaps we could convert to paths and change the individual parts of each letter that way, right? Wrong.

In the image below, I've converted the top text – with a translucent red fill and blue stroke – to paths, using Path > Object to Path. As you can see, the result is what you would expect from a

"normal" non-color font. I specifically used a translucent fill to show that the appearance of overlapping shapes in the original font does not result in overlapping sub-paths after the conversion.

The bottom example has a red stroke set, but no fill, as can be seen at the left-hand side of the status bar. I've used Path > Stroke to Path on this version, but Inkscape has left it untouched, claiming in the status bar message that there are "No stroked paths in the selection".

This inability to preserve the colors – when performing an Object to Path conversion – does somewhat limit the usefulness of colored fonts. Using Object to Path is a common operation to "fix" the

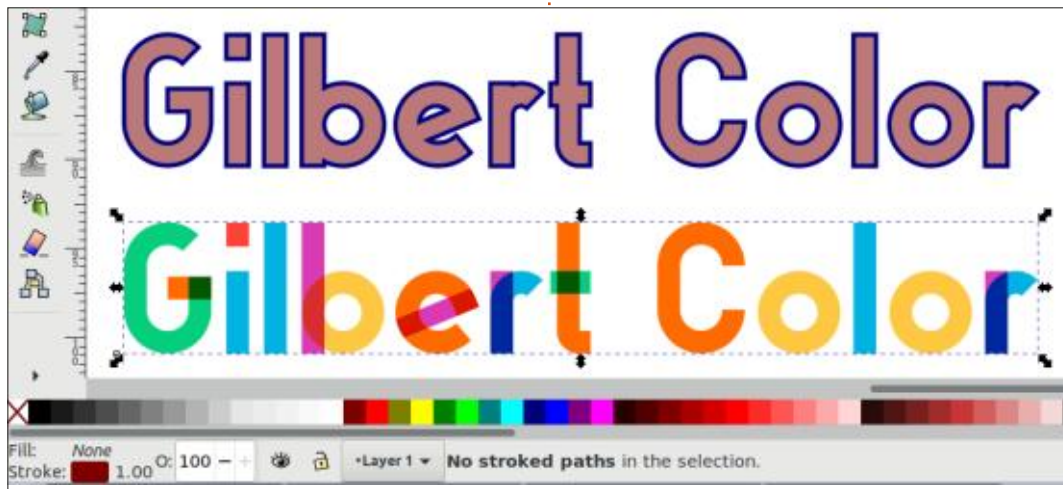
style of your text when you can't be sure that the recipient has the font in question – such as when creating an SVG file for use online, or exporting to a PDF. Obviously a solid-fill conversion of the font will not produce the same results at all in these situations.

Instead of performing a conversion, it is possible to load an SVG file containing colored fonts directly into a web browser, either as a local file or by serving it online. However, even if the end user has the font installed on their machine, their experience will vary significantly depending on the browser they use. While Firefox displays Gilbert Color in all its prideful hues, the latest release of Chrome (89 at the time of writing), will show just a solid-filled version.

Similarly, when exporting a PDF from Inkscape, you might be tempted to use the option for embedding the font. My non-exhaustive test of PDF viewers suggests that this may result in a file that can't be opened at all by some applications. Selecting the "Convert text to paths" option in the Save As... dialog results in a readable file, but only because the text is, once again, flat-filled with a single color.

Exporting to a PNG does work correctly. If you wish to create an SVG file for use online, however, the best option may be to use Edit > Make a Bitmap Copy in order to embed a bitmap version of your text into the SVG content, should you wish to ensure its colorful appearance across different browsers.

One final tip: if you do want to use different colors to those encoded in the file, you may be able to achieve the result you're looking for by applying a filter. Be aware that this approach gives you only limited control over the choice of colors – unless you're a filter expert who is prepared to spend a long time crafting a complex filter



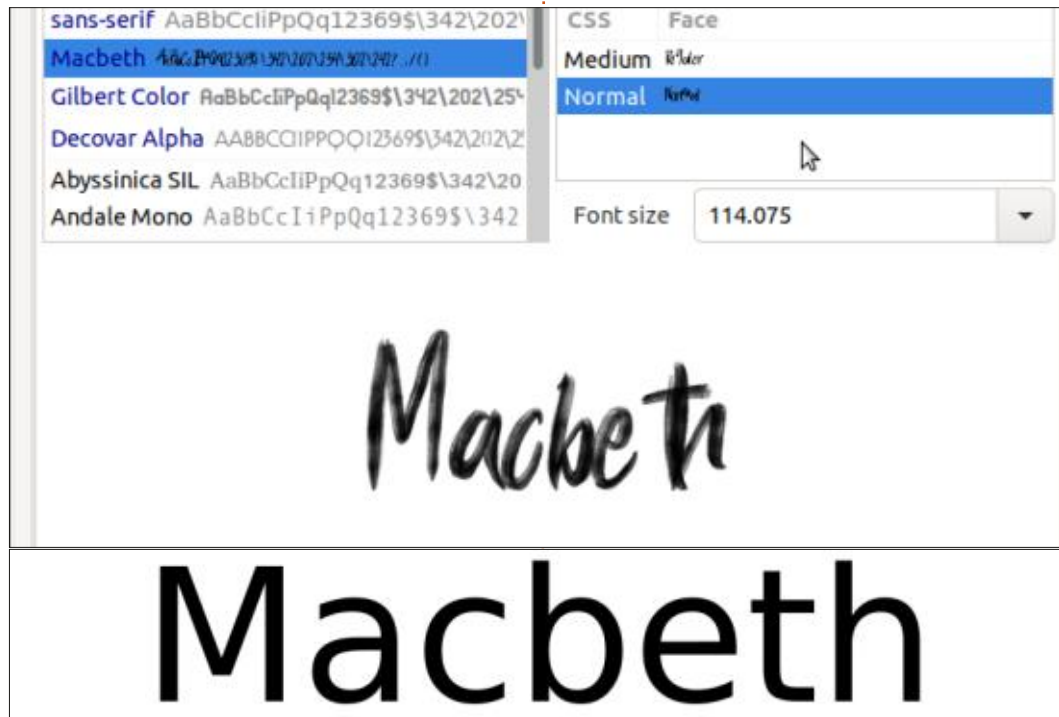
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chain. In this final example, the top image is the original text in its natural colors, whereas the other three were the result of randomly using some of the filters from the Filters > Color submenu.

BITMAP FONTS

There's an interesting side-effect of allowing SVG content in OpenType files. Due to the fact that SVG content can include embedded bitmap graphics, this format offers a backdoor through which bitmap fonts can be created. Of course, these are not the bitmap fonts that were prevalent in the 1980s – the OpenType wrapper imbues them with many modern font capabilities, if properly constructed. And unlike the pure bitmaps of the past, these modern files can seamlessly combine vector and bitmap content as required.

Bitmap fonts tend to result in larger files than their purely vector counterparts. For retro-styled fonts that hark back to video game text from decades ago, the size may still be modest. But many bitmap fonts are created to simulate brush strokes, spray paint



or photographs of physical objects, at a high resolution, which results in very large file sizes.

If SVGs in OpenType fonts are relatively rare, the bitmap-based subset is rarer still. Finding free fonts that fit this definition is even more of a challenge. So take my Inkscape findings with a pinch of salt, as they're based on a single sample of just one font.

I installed a brush-stroke font called Macbeth on my system, and tried using it in Inkscape 1.0 (and also the recently released 1.1 beta). In the font drop-down, and in the Text and Font dialog, the previews showed exactly what I had hoped for: translucent brush strokes in a dynamic, script style font.

On the canvas, however, it is a completely different matter, as shown in the image below. Either there's a problem with the font, or an issue with Inkscape's ability to deal with bitmap-in-SVG-in-OpenType files. I suspect the latter, but the fact that the previews work gives me hope that this is a temporary issue that will be fixed in a future update.

Despite Inkscape's refusal to render the font correctly, Firefox does display the font as intended within an SVG file. Oddly, despite not supporting color fonts, Chrome does also display the Macbeth font correctly when included in an SVG file, sending somewhat mixed messages about its support for SVG in OpenType.

VARIABLE FONTS

Typefaces typically live in "families", consisting of related fonts that vary in weight or style. A single typeface may consist of a large number of separate *.otf or *.ttf files, each holding a separate variation, such as light, bold, black, condensed, expanded, italic or some combination of these. But as non-bitmap fonts are usually made up of the same basic paths which are tweaked for each variant, wouldn't it make more sense to have just a single font file, and expose different parameters for controlling the path shapes? That is the premise behind "variable fonts".

A variable font file – once again in a *.otf wrapper – is typically larger in size than an individual

font, but considerably smaller than an entire family. It exposes a number of parameters, which are referred to as "axes" and which can potentially control any aspect of the font's design. The original designer chooses which parameters to expose, with each axis being assigned a cryptic four-character name. Those names are also mapped to more human-readable versions within the font file, but we'll come back to that shortly.

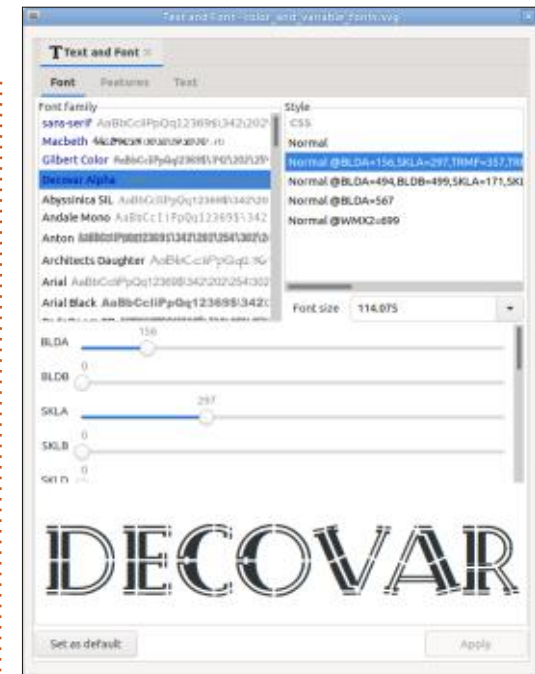
As well as the individual axes, the designer can also define "named instances". These are specific collections of axis values that are given a name. For example, the designer might include a "Weight" axis that runs from 0 to 1000, but define some named instances for "Light" (300), "Regular" (500), "Bold" (700), and Black ("1000"). If the font also had a "Slant" axis, then the named instances might also include options such as "Bold Italic" and "Light Oblique". Think of named instances as being a shortcut to a pre-defined set of parameters, so you don't have to tweak them all yourself.

In keeping with the tradition

forged at the start of this article, I'm going to use the same example font as every other article to demonstrate the use of variable fonts. Decovar is free of charge, and offers a wide selection of axes which can result in combinations of glyph shapes ranging from the conventional through to the bizarre. Here are a few examples rendered in Inkscape and, remember, these are all created from a single font file.



Within Inkscape, the axes are adjusted within the Text and Font dialog. You can see them displayed as a series of sliders just above the font preview in this screenshot. Note that there's a scrollbar on the right to access more sliders: Decovar exposes 15 different axes in total!



Unfortunately, Inkscape has a few problems in both the design and the implementation of this feature. First is that the sliders are labelled with the four-letter internal names of the axes, rather than the human-readable names that the font supplies. The second is that the named instances aren't exposed in this dialog, so you have no choice but to set the sliders yourself rather than using the designer's preferred presets.

The biggest issue, however, is that the area that holds the sliders is allowed to grow and shrink according to the available space, but the lower limit is too small. If

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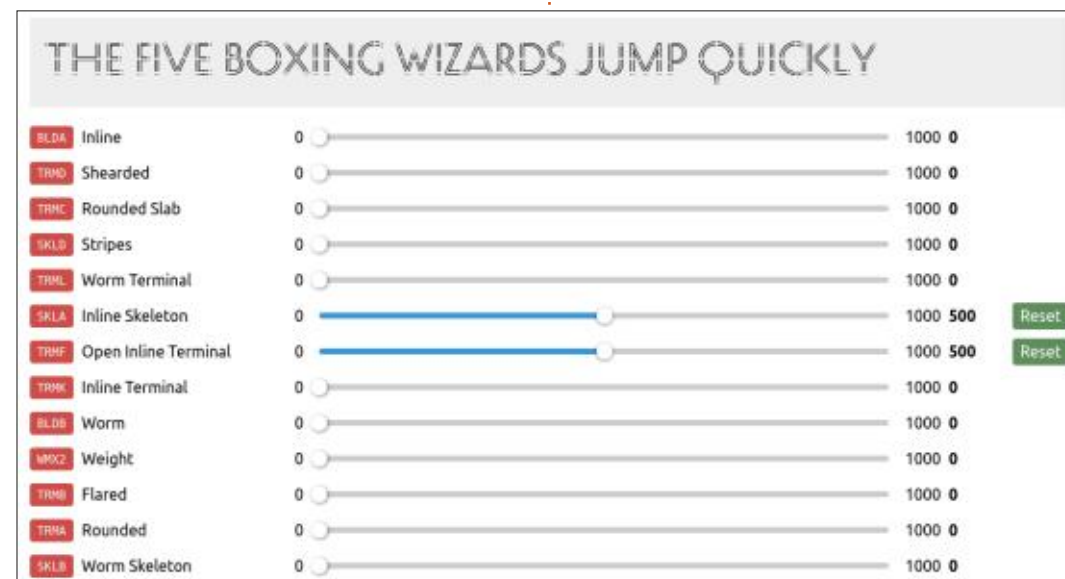
your font size is large, and your dialog height is small, the sliders can easily collapse down until only one is visible, making it extremely difficult to work with them. My advice is to keep the font size set at a small to moderate value, and the dialog as tall as you can, while you adjust the various axes. Once you're happy with the parameters you can then increase the font size again, should you need to.

Unlike color fonts, variable fonts do appear to be converted correctly when using Path > Object to Path. Conversely, although variable fonts have broad support across current browsers, SVG files created using Inkscape don't display correctly, falling back to the basic font as though all axes are set to zero. Clearly there's a mismatch between the CSS that Inkscape is creating, and what is expected by browsers. Further investigation is required on this front but, for now, if you wish to use variable fonts in your SVG files you should probably convert them to paths before deploying the files online.

FONT INFORMATION

Although Inkscape doesn't tell you the human-readable names of the axes, doesn't expose the named instances, and doesn't indicate which fonts contain SVG content, there's a way to explore the information encoded in your fonts which can help to overcome some of these shortcomings.

The bizarrely named "wakamai fondue" website is an invaluable tool. Just drag-and-drop a *.otf or *.ttf file onto the page, and a host of details about the font are extracted from the file. The processing all happens locally, without the font itself being uploaded to their server, so there are no licensing issues to worry about.



Where it's particularly useful is with a variable font. Here's a section of the output for Decovar:

Here you can experiment with the various axes (complete with human-readable names), or select from the "Instances" popup. When you're happy with the combination you've found, you can then laboriously apply each slider's value to its equivalent in Inkscape, based on its four-letter name.

This tool offers a whole lot more information as well, and is a great way to check out the hidden capabilities of your fonts. In fact, through using the beta of the next version of the tool I was even able

to discover that Gilbert Color actually offers five different variations on its color scheme, via the OpenType "alternatives" feature. Until Inkscape offers a way to access them, however, I guess we'll have to stick to tricks with filters.

LINKS

Gilbert Color:

<https://www.typewithpride.com/>

Macbeth:

<https://www.dafontfree.co/macbeth-opentype-svg-script-brush-font/>

Decovar:

<https://github.com/TypeNetwork/Decovar/>

Wakamai Fondue:

<https://wakamaifondue.com/>

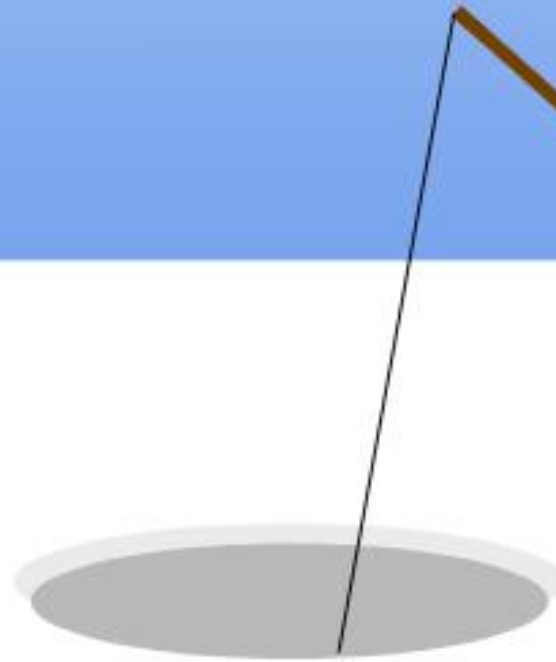


Mark uses Inkscape to create three webcomics, 'The Greys', 'Monsters, Inked' and 'Elvie', which can all be found at <http://www.peppertop.com/>

THE DAILY WADDLE

I AM FISHING
FOR LIKES...

THOUGHT YOU SAID
YOU WERE FISHING?





First off, don't be afraid, I won't use this column to proselytize, I promise. Regardless of anyone's belief or disbelief in the Bible's message, it is a significant work of world literature, and a great deal of our systems of law and of cultural mores derive from it, and those facts make the Bible unquestionably worthy of study and examination. Fortunately, Linux has a top quality program for this in BibleTime.

INSTALLING BIBLETIME

As is so often the case, BibleTime is most easily installed from the command-line by invoking a terminal (for more on how to get to a command line/terminal window, see Everyday Ubuntu in Full Circle Magazine issue # 160, page 40). Once we're in the terminal, we can type in the following:

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

then hit <Enter>, provide your superuser credentials (for more on this, see Everyday Ubuntu # 160,

page 40 again), hit <Enter> again, and the system will install BibleTime for us. We can now run BibleTime by going to the applications drawer at the bottom-left of our screen.

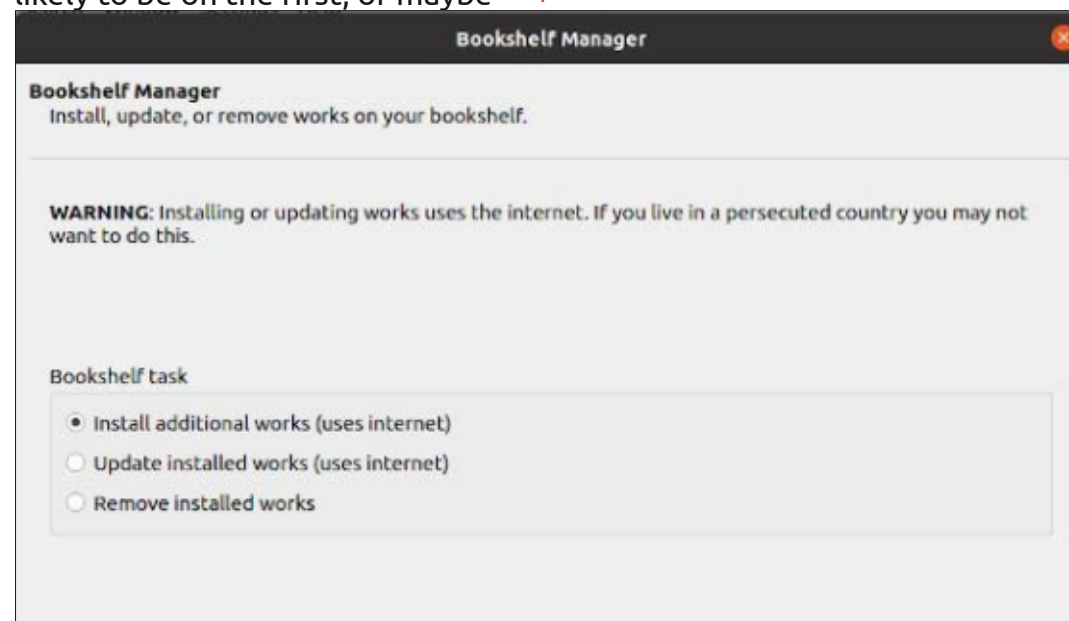
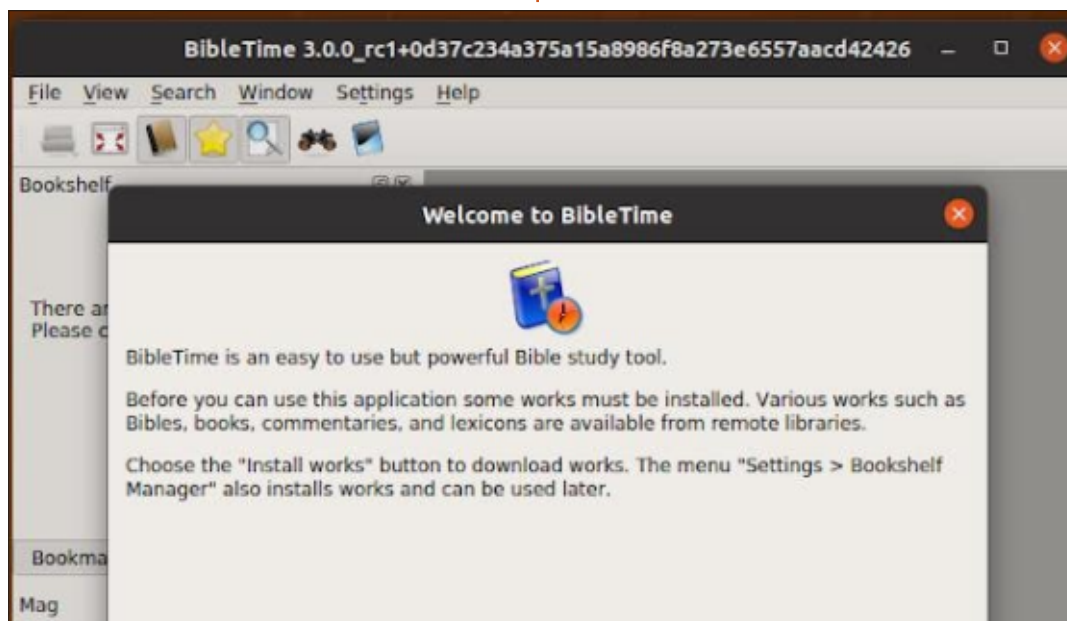
then scroll up, if necessary, using the dots on the right side, clicking on the top-most to take us to the first page of installed software, where we will probably find BibleTime. You can also hit the magnifying glass icon at the top to invoke the search function, and search for BibleTime, but it's very likely to be on the first, or maybe

BibleTime: Pt1

second page, considering the alphabetical order of the software listings. Click on BibleTime and it will launch.

BOOKSHELF MANAGER

When you start BibleTime for the first time, it will launch the Bookshelf Manager. In order for BibleTime to function, it first has to download some data (Bibles, lexicons, atlases, dictionaries, etc), so that will be the first thing we do. You'll see a Welcome screen that explains this (bottom left).



Since this is the necessary first step, you'll want to make sure you're online – especially if you've gone offline since the initial installation. The first Bookshelf Manager screen looks like that shown on the previous page, bottom right.

The first time through, you're obviously going to need to pick 'Install additional works', as above. On the second screen, you can select your remote sources.

Bible.org and Crosswire will be sufficient for most people, as they are jam-packed with various works, but Xiphos and eBible.org are also

worthwhile resources. On page 3, the Bookshelf Manager wants to know what languages you want to use:



Then it will let you start selecting the works you want to install specifically:



Click the boxes to select the desired works, then click Install Works. This part of the process can take a very long time, you might want to start it when you know it will be a while before you want to use the computer, like overnight (of course, you can always multitask while it runs in the background, but expect slowdowns).

You can expect to see the progress screen for quite some time.

Once it completes, you'll be in the BibleTime main interface screen (bottom left).

Next month: We'll adjust BibleTime's configuration and examine the program's functionality.



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.



Welcome back! Every once and a while, I'll be doing a review of a MicroController of some sort that I have tested. I don't get any free devices from anyone, so if I can afford one, I'm pretty sure that you can too. This month, we have a lot to cover, so let's get started right away.

CYTRON MAKER PI PICO

A day or so after the release of the RPi Pico, I found out about this product. Cytron (<https://www.cytron.io/c-development-tools/c-arm-development-tool/p-maker-pi-pico>) is a really innovative company based in Malaysia. Unfortunately, when I found out about it, it was already sold out even though it was still in beta. I waited, and the next batch came in, but was sold out again. Finally, I

was able to get one of the third batch of devices and, believe me, it was worth the wait! They were sold out again within a few hours.

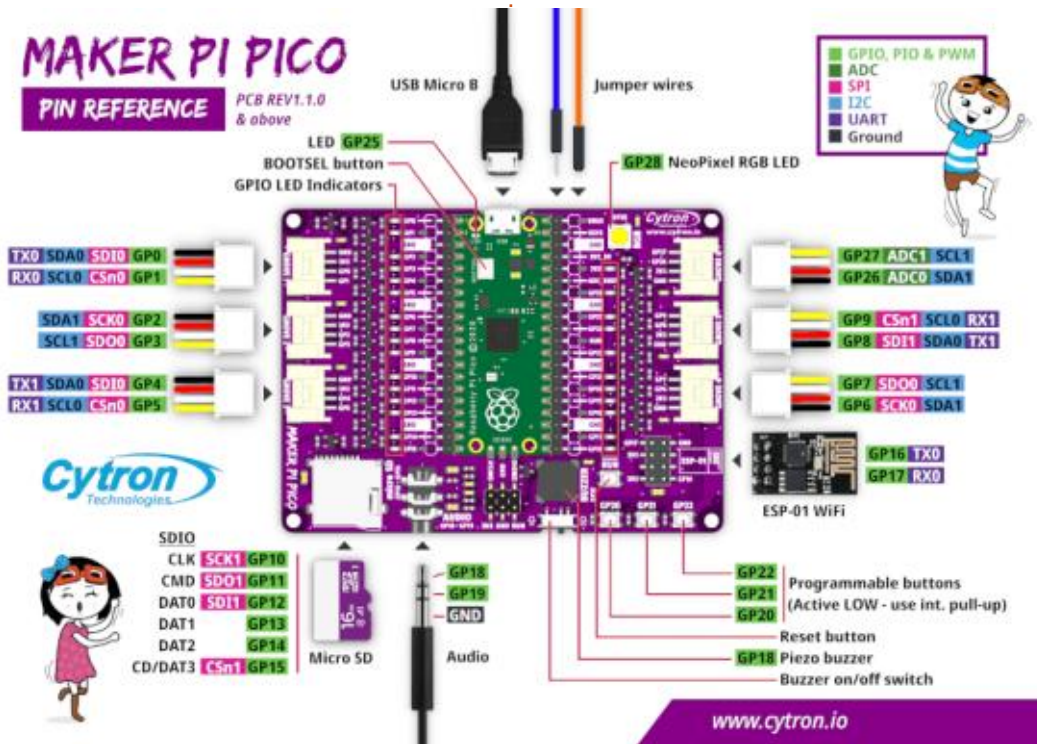
The device includes a development board with a Pico already soldered onto it. Each pin is brought out on the board as a male header pin, and every GPIO pin has an LED. There are 6 Grove connectors, 3 buttons, a buzzer, an SD Card slot, a dedicated port for an ESP-01 WiFi card, a NeoPixel RGB LED, and more. All of that for just under \$10 USD, and has a 1-year warranty! Shipping (to the U.S. at least) is reasonable and fairly fast. Please be aware, the ESP-01, MicroSD card, and jumpers, are not included with the board.

Once I got it and plugged it in, I was surprised that a demo program was already flashed to the Pico. At first glance, the demo highlights the GPIO LEDs by walking through each LED quickly turning them on then off while the buzzer plays a short snippet from the iconic Mario theme song. Being curious, and fairly impressed by the fact that

the demo was already there, I tried pressing each of the three buttons. Sure enough there was more demo to be seen. Button 1 toggles all of the GPIO LEDs. Button 2 runs through all of the NeoPixel colors, and Button 3 plays the Mario theme while slowly melding the NeoPixel color shift.

I have to say that one of the things that I wanted the board for, was to learn more about the NeoPixel RGB LED. I always thought that they were pretty cool, but not cool enough to spend the money to get one of the various types. I really couldn't come up with a compelling project to justify the purchase. When the demo got to the parts that controlled the NeoPixel, it was so bright that I couldn't look directly at it. I have created a demo for using the NeoPixel that allows the NeoPixel brightness to be controlled. We'll take a look at it next month.

The good people at Cytron have set up a github repository with example code for both MicroPython and CircuitPython.



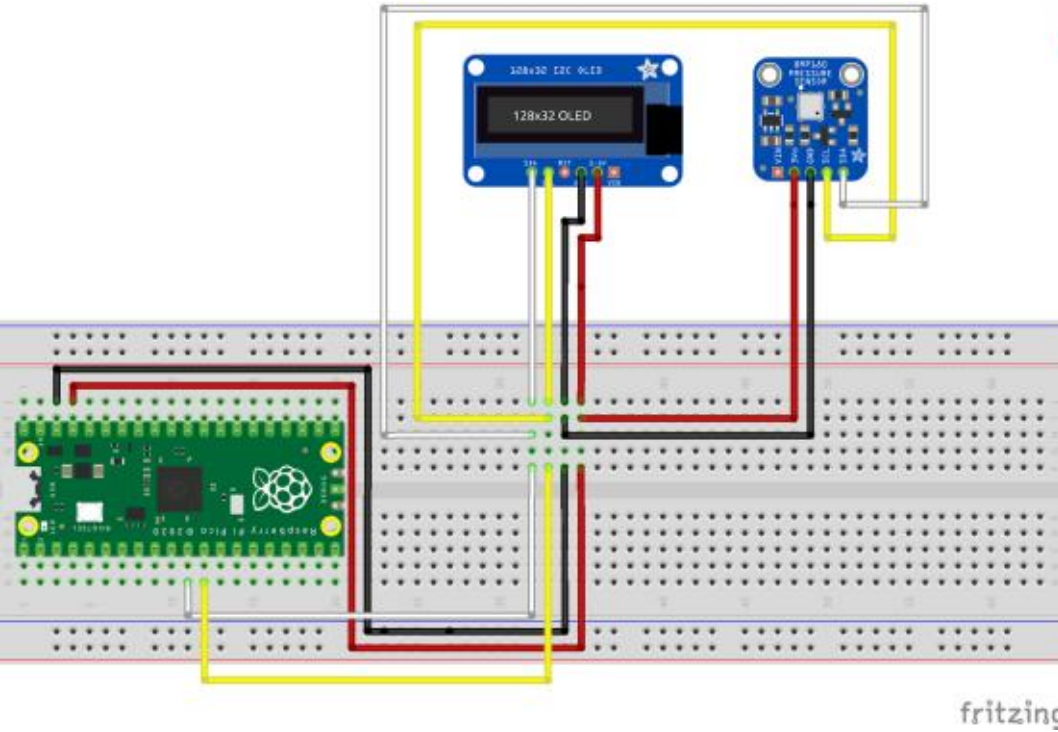
MICRO THIS MICRO THAT

You can find it at <https://github.com/CytronTechnologies/MAKER-PI-PICO>. While there aren't examples for everything that the board can do, for the most part you will find plenty of things to keep you busy for a while. The one frustrating thing is that while the basic capabilities of the ESP-01 will connect to the local network wirelessly, going further than that doesn't seem to work. I will keep trying to come with some working code for you in the next month or so.

Over all, this is a great way to get into using the RPi Pico – with lots of exploration possibilities for a very low cost. It's especially good for a younger budding scientist to learn since there is no soldering involved.

PROJECT OF THE MONTH

Last month, we went over a couple of simple "get started" projects that involved the Pico and making the onboard LED do things. Moving from the onboard LED to an offboard is not much more



Pico Physical Pin	Signal	Wire Colour
36	3.3 Vdc	Red
38	Ground	Black
11 (GP8)	SDA (I2C 0)	White
12 (GP9)	SCL (I2C 0)	Yellow

involved, and there's a lot of information out on the web to do this. I'll let you research that for yourself. I can, however, point you to a good project direct from the Raspberry Pi Foundation. While designed for young people, it gives you a step-by-step introduction to the Pico and MicroPython Programming. You can find it at <https://projects.raspberrypi.org/en/projects/getting-started-with-the-pico>.

Now for our project. We'll be dealing with a real world sensor on the Pico. To connect the sensor to the Pico, we will be using I2C. For an overview of I2C, you might want to set your wayback machine to Full Circle Magazine issue # 112 in August 2016. Basically, I2C is a specialized 2-wire serial communication protocol that allows multiple devices to exist on

the same two-wire buss. Each I2C device has an address that we use to talk to that individual device.

This month, we'll work with the Pico as our Microcontroller, a BMP180 Temperature, Pressure and Altitude sensor, and an OLED display. Both the display and sensor communicate to the Pico via I2C, which makes the wiring very easy.

As you can see from the wiring diagram shown left, there are only 4 wires needed for each device and they all use the same connection points on the breadboard. To make it easy for you, I've created a simple table for the connections to the Raspberry Pi Pico.

I've tried to make the wire colors consistent with "Normal" conventions. Red for positive

MICRO THIS MICRO THAT

voltage, black for ground, white for data, and yellow for clock signals. I suggest that when you make your connections, you do it with the Pico unplugged from your computer. Once you plug it in, fire up Thonny.

Whenever I work on a project that uses I2C devices, the first thing I do is to make sure that the Microcontroller that I'm using sees the sensors and/or displays that I plan to use. Sometimes, the jumper wires don't quite make good contact in the breadboard. This isn't all that unusual. To do this, I have created a small program (top right) that I keep on the Pico.

The first thing is to import the machine library from MicroPython. In this program, I assign the I2C pins right away. Since I'm going to be using the I2C buss 0, I'm using GP8 pin (physical pin 11) for the data line (SDA) and the GP9 pin (physical pin 12) for the clock line (SCL). Next, I define the actual buss and create the i2c object.

Then I use the i2c.scan method to get a list of the addresses that exist on the buss, and then print that list. Notice that I am using the hex value of the device.

When I run it, I get back the following information...

```
MicroPython v1.14 on 2021-03-24; Raspberry Pi Pico with RP2040
Type "help()" for more information.
>>> %Run -c $EDITOR_CONTENT
0x39
0x3c
0x77
>>>
```

So what do the returned numbers mean? Each of the numbers represent the I2C address for each device on the buss that was found. For this run, the addresses represent the following devices (see image below)

Right now, you probably are wondering why I have a TSL2561 luminosity sensor on the buss as

Address	Device	Type
0x39 (57)	TSL2561	Luminosity sensor
0x3C (60)	SSD1306	OLED 128x32 Display
0x77 (119)	BMP180	Temp, Pressure, Altitude

```
# i2cscan.py
# Searches the i2c bus for i2c devices

import machine
sda = machine.Pin(8)
scl = machine.Pin(9)
i2c=machine.I2C(0,sda=sda,scl=scl,freq=400000)
devices=i2c.scan()
if devices:
    for dev in devices:
        print(hex(dev))
```

well. That's because the actual breakout board that I have is one that is a number of years old and is a 4-in-1 device that includes the BMP180 and the TSL2561 all together.

A number of people whom I've talked to have a BMP180 and a BMP280 both. And both are very similar in appearance. This leads to a huge amount of confusion, since the driver library for the BMP180 won't work with the BMP280, and vice versa. In order to combat this confusion, you can verify which device you are using by doing a simple REPL check by reading memory location 0xD0 on the device. If you get back a 0x55, you are using a BMP180. If, on the other hand, you get back an 0x58, you are using a BMP280. This information comes from the datasheet for the devices.

```
>>> from machine import Pin, I2C
>>> i2c=I2C(0)
>>> i2c.readfrom_mem(0x77, 0xD0, 2)[0]
85
>>> print(hex(85))
0x55
>>>
```

If you are paying close attention to the code that I've presented so far, you will notice a difference in the way that I'm creating the i2c object. The method that I presented in the i2cscan program is the "official" way of doing it. The one that I present in the memory-read way is a somewhat newer way and is much easier. I have a tendency to use the second way, since it uses all of the defaults without having to explicitly define each parameter. I presented the first, so you know the "proper" way, and if you need to change the pin assignments or modify the frequency of the buss up or down,

you already have the information.

Now that we have verified the existence of the sensor and display, and have everything wired up, let's get into the code (top right). Download the three files (bmp180.py, BMP180-OLED.py and ssd1306.py) from my github repository (see below) to your local computer. Then you will need to copy the file "bmp180.py" and "ssd1306.py" onto your Pico. You can use the File|Save Copy function in Thonny. The driver libraries have to be on the Pico. While you can run the actual program from your local computer, I suggest that you copy it to the Pico as well, just to keep everything together.

As with any of our Python files, you need to start with the imports that are needed for the program (bottom right). Next, we will set the width and height of our OLED display device.

The next three lines deal with configuring the BMP180 sensor. The line that is commented out is the "default" baseline for the barometric sensor. I modified it for where I live in Texas. Your "mileage" will vary. You can get more information on this from

<https://www.circuitbasics.com/set-bmp180-barometric-pressure-sensor-arduino/>

```
bmp180.oversample_sett = 2
```

```
# bmp180.baseline = 101325
```

```
bmp180.baseline = 102032 #  
Modified for my location in  
Texas
```

At this point, we'll clear the OLED display. The .fill(0) command sets all the pixels to 0, which is off or black. Then we'll set some text starting at column 5, row 5 of the display. We must use the .show() method to actually display the changes. This line will stay the same throughout the run of the program.

```
# Clear the OLED Display
```

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

```
# Send the header to the OLED
```

```
oled.text("BMP180 Demo", 5, 5)
```

```
oled.show()
```

We will now create a "forever" loop (next page, top right) that gets the temperature, pressure and altitude values from the BMP180 and display the temperature on the OLED display.

```
#####  
# BMP180-OLED.py  
#####  
# Combined demo written by G.D. Walters  
# code from various sources  
# -----  
# Demonstrates how to use a BMP180 Temperature/Pressure/  
# Altitude sensor and  
# a SSD1306 OLED Display together on a Raspberry Pi Pico  
# -----  
# Imports  
# -----  
from bmp180 import BMP180  
from time import sleep  
from machine import I2C, Pin # create an I2C bus  
object accordingly to the port you are using  
from ssd1306 import SSD1306_I2C  
import framebuf
```

```
# Set the Width of the OLED Display  
WIDTH = 128  
# Set the Height of the OLED Display  
HEIGHT = 32
```

Now we set up the I2C bus using the "easy" method and create the display and sensor objects.

```
# Initialize the I2C object on Buss 0  
# Physical Pins SCL - 12 SDA 11 (SCL GP9, SDA GP8)  
bus = I2C(0)  
# Init oled display  
oled = SSD1306_I2C(WIDTH, HEIGHT, bus)  
  
# Initialize the BMP180 Device  
bmp180 = BMP180(bus)
```

Since I don't do metric very well without having to do a lot of thinking, I've added a few lines to deal with the conversions for me. The tempf is the Fahrenheit value from the Celsius value. The variable

p is the base pressure reported by the BMP180, which I convert to inches of mercury from the default hectoPascals (hPa). If you want a different output unit of measure, you can again refer to the above

mentioned web site. Finally (bottom right), I convert the altitude from meters to feet. Notice that this value seems to change quite a bit, but for our purposes it is close enough.

The last few lines of the program provide the output. We print to the REPL terminal the four values Temperature Celsius, Temperature Fahrenheit, Barometric Pressure, and Altitude. It would be much easier if MicroPython supported the Python f-strings, but we live with what we can get. You will notice that there are two lines that output to the OLED display that are very similar. The first prints the temperature at column 5, row 23 and the second prints the same thing in black (with the last parameter as 0), which erases the text after the sleep interval of 2 seconds. With a bit of experimentation, you could modify the column value to only erase the actual temperature value.

Your output in Thonny should look something like this...

```
Temp: 23.78C TempF: 74.80
Pressure: 29.78 Altitude
929.1451
Temp: 23.78C TempF: 74.80
Pressure: 29.78 Altitude
```

```
931.2545
Temp: 23.79C TempF: 74.82
Pressure: 29.78 Altitude
930.3514
Temp: 23.79C TempF: 74.82
Pressure: 29.78 Altitude
928.817
Temp: 23.79C TempF: 74.82
Pressure: 29.78 Altitude
928.817
Temp: 23.79C TempF: 74.82
Pressure: 29.78 Altitude
929.2014
Temp: 23.80C TempF: 74.84
Pressure: 29.78 Altitude
928.2951
Temp: 23.80C TempF: 74.84
Pressure: 29.78 Altitude
930.7858
Temp: 23.81C TempF: 74.85
Pressure: 29.78 Altitude
930.4326
...
```

KNOWN DISPLAYS AND SENSORS FOR THE RPI PICO

I've been really busy testing various sensors and displays that I have on the Pico. I created a list of the sensors that I tested and where I got the driver libraries, since I seem to get a number of questions from people just starting with the Pico. All of these are 3.3volt compliant, and safe to use directly with the RPi Pico. Here is a list of some of the ones that I have verified and a link to the working driver library, where possible, along with any notes that I made

```
# Start a forever loop getting and displaying the
temperature
```

```
while True:
    # Get the temperature (centigrade)
    tempc = bmp180.temperature
    # Convert it to Fahrenheit
    tempf = tempc*9/5+32
    # Get pressure and altitude
    p = bmp180.pressure
    # Add an offset for my location in Texas
    p = (p * 0.0002953)+ 0.7
    altitude = bmp180.altitude
    # Convert meters to feet
    altitude = altitude * 3.28084
```

```
print("Temp: {0:.2f}C TempF: {1:.2f} Pressure: {2:.2f}
Altitude {3}".format(tempc,tempf,p,altitude))
```

```
oled.text("Temp: "+str(round(tempf, 2)), 5,23)
oled.show()
sleep(2)
oled.text("Temp: "+str(round(tempf, 2)), 5,23,0)
oled.show()
```

during testing...

LSM303DLHC - Acceelerometer + Magnetometer - <https://github.com/kamikaze/pyboard-examples/tree/master/imu> (Works, but accuracy not verified)

Si7021 - Temp/Humidity Sensor - <https://github.com/robert-hh/SI7021>

Requires small modification - <https://github.com/gregwa1953/SI7021-MicroPython-RPi-Pico>

BMP180 - Temp/Pressure/Altitude Sensor

<https://github.com/micropython-IMU/micropython-bmp180>

(You have to comment out line 47 of the driver self._bmp_i2c.start() to make it work on the Pico).

Or you can find already modified at https://github.com/gregwa1953/FCM168_MicroThisMicroThat

DHT22 - Temp/Humidity <https://github.com/danjerron/PicoDHT22>

TSL2561 - Lux Sensor
Works but unsure of values

IR-08H - Works, but not very sensitive. May need to be calibrated.
<http://irsensor.wizcode.com/> for information
My Pinout - Enable, VCC Out, Gnd

OLED1306 - OLED Display 128x32 and 128x64 modes
https://github.com/gregwa1953/FCM168_MicroThisMicroThat

LCM1602 - 16x2 LCD I2C
https://github.com/Bhavithiran97/LCM1602-14_LCD_Library

ESP-01 - WiFi - Connects to local network router, but can't get out past there.

LCD 16x2 3 volt display
https://github.com/Bhavithiran97/LCM1602-14_LCD_Library

I will try to set up pages on my github repository for each of these (one has already been done) as time allows.

INTERESTING WEBSITE INFORMATION ON MICROCONTROLLERS (PICO BASED)

I wanted to provide you with some links to interesting websites that have news and projects about the RPi Pico.

<https://www.raspberrypi.org/documentation/rp2040/getting-started/>

You can also check out Tom's Hardware website, which has multiple postings about the Pico, as well as the Raspberry Pi and other Microcontrollers - <https://www.tomshardware.com/>

LOOKING TO THE FUTURE

In the coming months, I'll be talking about CircuitPython on the RPi Pico, the Sparkfun ESP32 Thing Plus, the NodeMCU ESP8266, various controllers and displays, connecting the RPi Pico to a MQTT broker either on your network or on the Internet, and much more. My goal here is to provide information about various MicroControllers, sensors and

displays that are inexpensive and easy to connect to the various boards.

You can find all the code and images from this article at my github repository:
https://github.com/gregwa1953/FCM168_MicroThisMicroThat

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.thedesignatedgeek.xyz.



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UBPORTS DEVICES

Written by UBports Team



THE DAILY WADDLE

GOOD TO SEE YOU ALSO
CAME TO THE FANCY DRESS
PARTY, ICOGNITO...



clink!





Some background. I have two desktop computers, both refurbished HPs.

Refurb 1 is older, and has a 1 TB HD which I had installed earlier. It ran Ubuntu Linux - I think 18.04 LTS. I have used this as my main computer for all tasks for well over a year with no issues. However, that came to a halt recently when I attempted to update the software and got the message "there are no more updates available for 32-bit computers". Not good. I was running an LTS system so could have stayed with it for some time, but thought there was a "simple" alternative via my Refurb 2.

Refurb 2 was 64-bit with a 500 GB HD, and was set up to dual-boot Ubuntu and Windows 10. Not necessarily a good thing to do. I had also been using it for some time with no issues and my brain made a hasty decision to fix my situation by swapping the two HDs between computers. My thinking was that I would then have the 1 TB HD with all my files, email, etc, on my 64-bit computer. Swapping

the HDs was not so simple and would have stopped me, but I found some very helpful videos on the HP Support website. Five stars to HP Support!

I did one wise thing in that I did copy my files onto a portable HD. That was my only wise move to this point. After swapping the hard drives, my Refurb 2 would not boot up. Let me save many words of explanation in one simple statement. "Over a number of days, many attempts to install a new workable version of Ubuntu on the 1 TB drive all failed". I was a very frustrated person, but eventually came to the decision that I should swap the two HDs back to their original computers.

After doing that and abandoning the dual-boot with Windows 10, I created a StartupUSB thumb drive with Ubuntu 18.04 LTS and performed an "Erase disk and Install Ubuntu" action.

Net, after the many days of frustrating circular install and

failure attempts, I now have a functional version of Ubuntu 18.04 LTS on a 64-bit computer with my files restored.

In hindsight, I realize that my approach was too hasty and not so well planned out. Consider this a learning experience and try to do better next time.



MY FCM STORY

Written by Jim Dyer

It's been a lot of years since I last contributed to the magazine, and it's probably for the best - this might be the first time I've ever sent in content before the deadline! I found the magazine back when it was just an idea on Ubuntu Forums, and somehow managed to get myself a fancy title and a regular writing commitment. I'd like to say a big thank you to Ronnie for putting up with my tardiness; and to everyone involved in the magazine for keeping it alive all these years - it's a fantastic achievement, and it's looking better than ever!

Robert (*mrmonday*)

Former Communications Manager, Writer, and Deadline Ignorer

I've loved FCM ever since I first came across it, and I've contributed a few letters (and one article, if I remember correctly).

Several years ago, I discovered one of your threads about FCM on

Reddit. At that stage, I didn't have a Reddit account, so I created one just to post a comment. That comment was downvoted... because it was a positive comment by a new poster! I didn't know about that until about much later, after the comments were closed. I was a bit miffed, because had I been disparaging, it wouldn't have been downvoted. Goodness, some redditors are incredibly judgemental.

FCM has helped me to discover new ideas and new solutions, and I've included some of the editions as sources in my personal documentation. One example is how to use VOIP (FCM#55, page 24). A recent one is Ventoy (FCM#165, page 26), which I wish I'd known about a long time ago.

FCM is a fantastic resource that has been instrumental in enriching my Linux experience. It has something for tyros and seasoned users alike.

Paddy

I got into Linux when I was living in Sweden - this was in 2010. I had been having a lot of problems with Windows, and finally decided to reformat my hard drive and replace it with Ubuntu 10.04. I found FCM shortly thereafter and have been a reader ever since.

My favorite parts of the magazine are the tutorials, reader questions, and command and conquer.

John Niendorf

Years back, I was just starting my move to Ubuntu Linux 12.04 LTS from Windows XP. Don't recall details, but in my reading I found FCM. Wrote a short article about my switch for FCM #85, and signed up as a volunteer editor. Now running Ubuntu 18.04 LTS on one desktop and 20.10 on another. FCM is a great source of helpful information on a great many Ubuntu related subjects. My favorite articles in FCM are Letters,

QnA, and the "How to" articles.

Jim Dyer

Fourteen years ago, I was still working, I am now retired. I had been using Ubuntu Linux for about three years and was looking around on the internet for help. My knowledge of Ubuntu Linux was very sketchy. Somewhere amongst all that help I was getting, someone mentioned FCM. I was quick to subscribe because I enjoy magazines. Unlike the paper magazines, FCM was electronic and free!

Victor Moisey

I have been reading FCM since day 1, initially to get to grips with Linux/Ubuntu and start using it. Lately, more to stay up-to-date with the latest stuff happening. Always been fun and great to read it, hope you will continue!!

Ludo

I started reading Full Circle Magazine in 2013. I had a netbook loaded with Windows XP. Slowly but steadily the netbook couldn't update itself anymore, and it took about 7 to 9 minutes to boot.

A friend at work suggested Ubuntu – which I tried. It took me about one year, and he kept up trying to convince me. I kept on saying Linux, nah, don't like it. Then one day he showed me his laptop, and I was quite surprised, it had actual icons and no command-line-only. So I tried it on the terribly slow netbook, after making an image of the drive.

To my amazement, the same netbook booted in about 45 seconds. Needless to say I never

restored the image of Windows XP.

The same friend suggested Full Circle Magazine as well. He told me that Full Circle was the best source for Linux information. So I started reading it. The very first issue that I read was FCM#75 which I downloaded in August 2013

Jan Holtman

The French language readers may know my pseudo, d52fr. Specialist in change management and computer training in an IT company, and close to retirement, I was looking for a way to use my small knowledge in English by translating technical or IT texts into French for other people: OS or program documentation, articles in Web news,...

Thanks to my two sons, I met Ubuntu in 2008 (I keep my Ubuntu 08.04 CD carefully), and I made a dual-boot install of it along with Windows XP (not updated at that time) on my desktop. I refused to upgrade to Windows 7 and have to pay for a new license.

During the following months and years, I tried Ubuntu upgrades and other flavors, and Mint and Debian. Although, as a fan of technology, I was delighted by Kubuntu, because it can be highly customized, I stayed with Ubuntu for my normal usage since I found that I could ignore it and concentrate on my work and various applications.

On the Internet, I read the news about GNU/Linux, OSes and programs devoted to offering a free alternative to those of Windows. And so I met the Full Circle Magazine, our beloved Linux news magazine, in about 2010.

In the fall of 2014, I got in touch with the group in charge of the French language translation and edition of the magazine. I was warmly welcomed (ten fingers and 2 eyes more are valuable). AE, Bab and Frangi, not to mention the admin, PhilFred91, explained the procedure they followed from the reception of the English PDF file to the release of the French PDF file. So, beginning in November 2014, I participated in this monthly activity with issue 85 (that of May 2014). 5 months late! Depending on the month, three or four of us worked

hard to reduce the delay between the English and French versions. 8 months later, in June 2015, we were only 1 month late for issue 97. I am still a member of this friendly squad and, in these last months, we've improved our translation process; so we put the French PDF online less than 15 days after the release of the English version.

During my career, I used edition software for user guides. So I am able to replace our Scribus editor, Bab, when he wants to have a break.

Three of us are able to translate and edit the monthly issue of Full Circle Magazine in French; but to have the help of one or two more people would accelerate the process while providing new ideas and methods and giving us the ability to rotate the members of the monthly team without fearing that our dear magazine would be penalized. Welcome to everybody!

D52fr

I have no idea how I came to know and like "full circle". Enjoying it for a few years.

Favorites:

- NEWS - I actually browse or read each article.
- The Daily Waddle - some of them are actually very funny.
- Erik The Unready - Book reviews help decide if I need to explore a book any further. Tell him "Thanks" for all of his work. I would suggest keeping him around as long as possible.
- Micro - Looking forward to learning new hardware/software. I currently use Arduino boards.

Bill Kujawa

A long, long time ago, I was reading all I could about Linux and loved The Gimp and other magnificent software and so, one day, I came across FCM while looking for manuals on the net and I have been hooked ever since. Happy 14 years !

Nadesj AKA *Filip*

Many thanks to all who sent in a little something for this article.



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

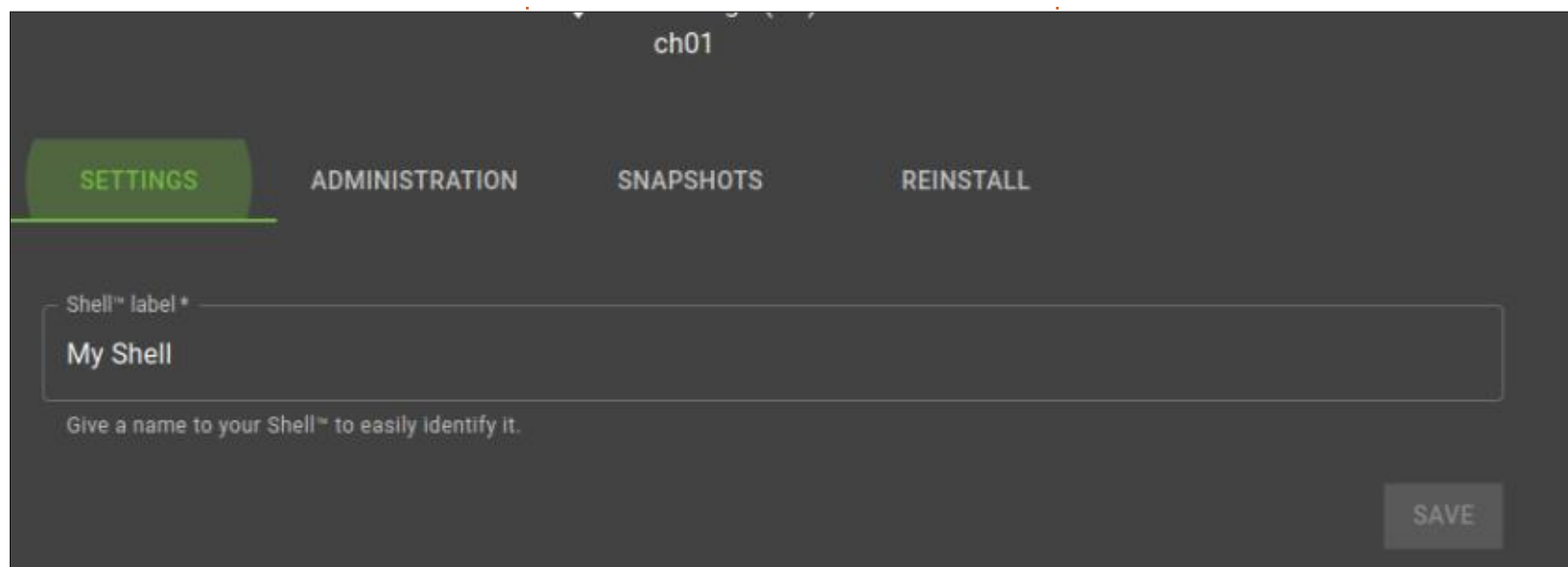
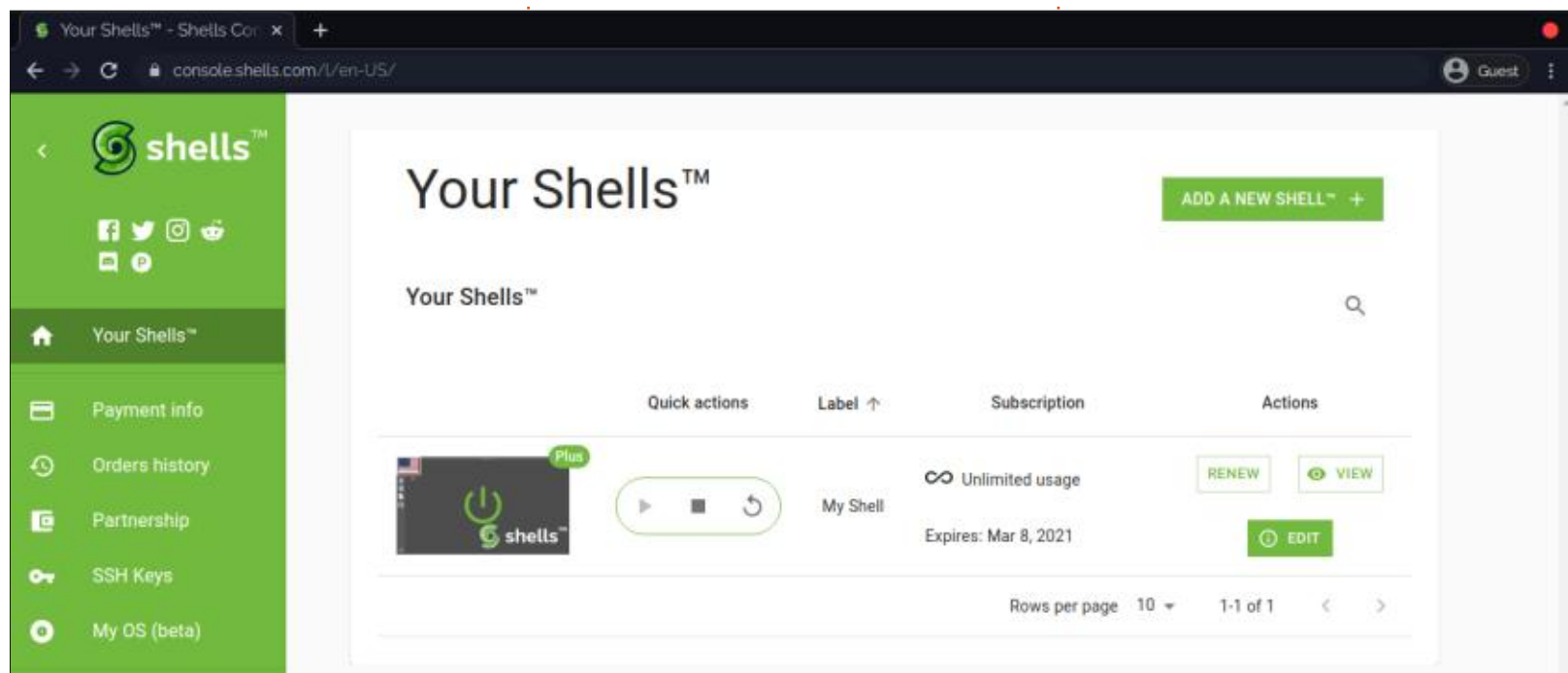
Written by Emily Gonyer

Shells.com

For the last month, I have had the pleasure to test a Shells.com instance. Throughout, they have been remarkably responsive to technical support inquiries, always replying within a few hours, and frequently within a few minutes. Which is to say, far sooner than I ever would have expected them to.

Regardless of what browser you use to access Shells, whether Firefox ('dark' theme below), Chrome, Chromium, or even Edge on Windows 10, the experience is identical. Indeed, even the Android App gives much the same experience. After logging in, which I usually do with my Google account, you are presented with Your Shells, which can be done with just your email and a password, or a couple of other authentication methods, you can set up a new shell (via the "Add A New Shell" button), Start, Stop, or Restart your current shell, or "Edit" - from which you can edit your settings.

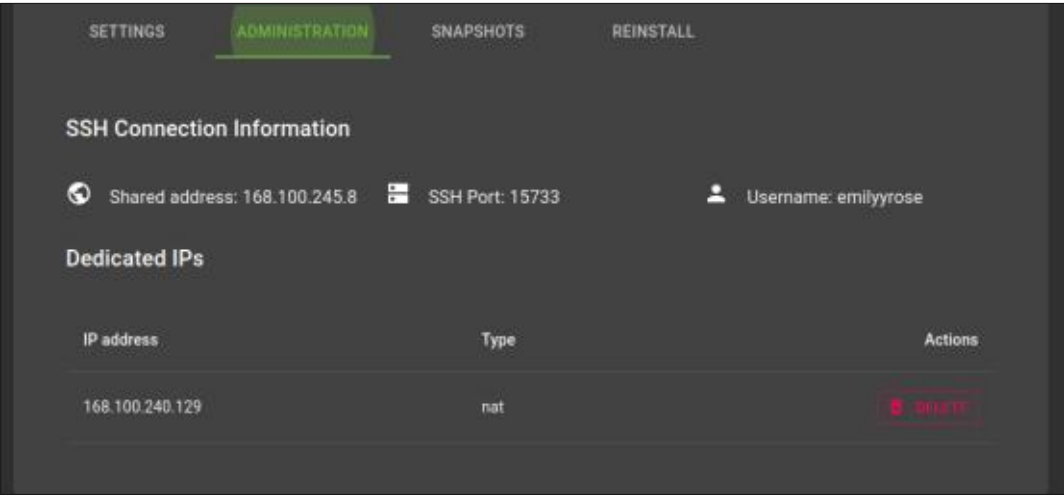
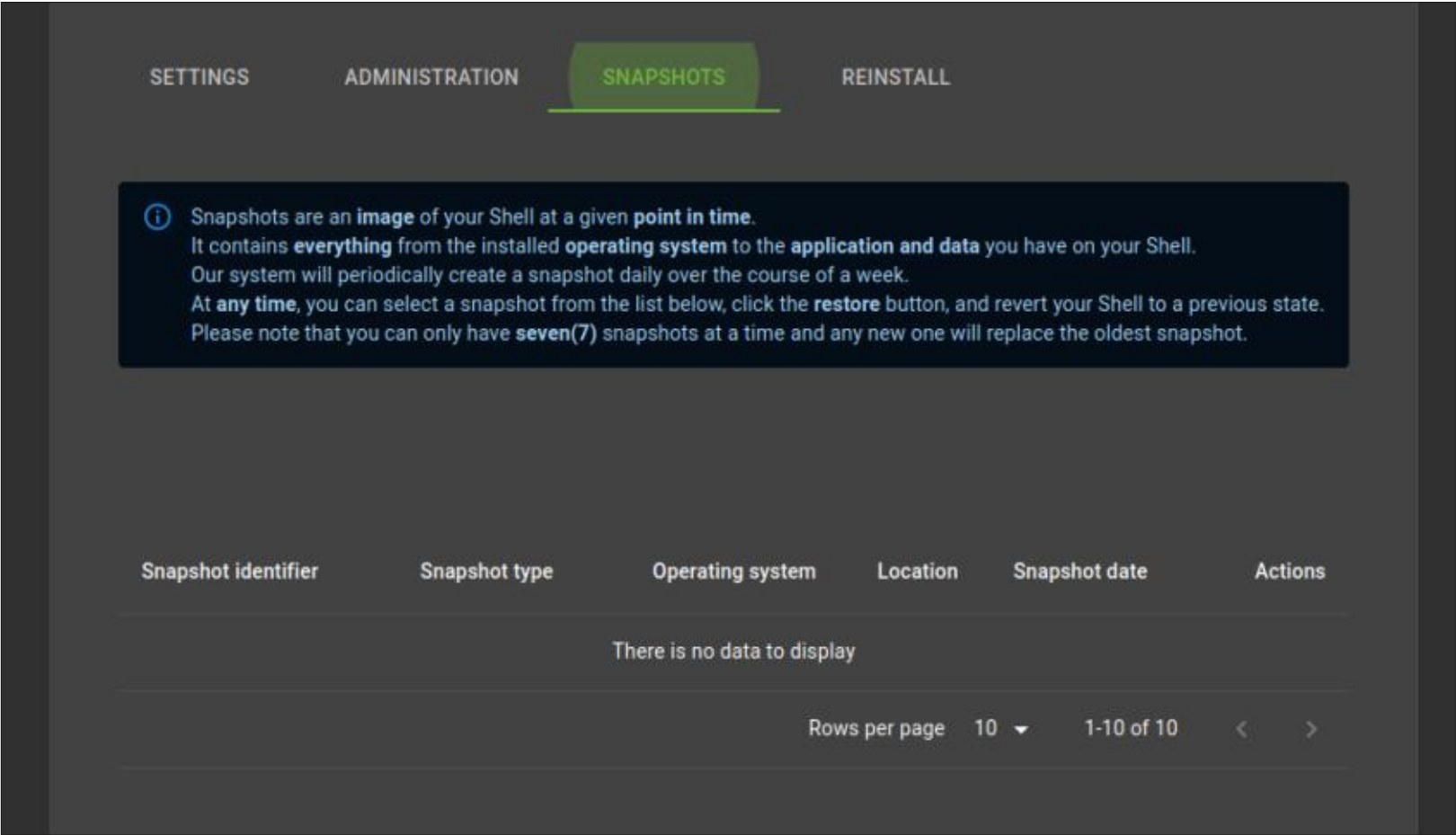
When you first 'Edit' your shell,



you are presented with the option to re-label your Shell. I haven't taken advantage of this, as I have only one, but it would be a useful option if you had multiple Shells running in order to keep them sorted.

Administration is about SSH Connection Information and Dedicated IPs. I happen to have a Dedicated IP, since I paid the \$1 for one, in order to be able to test a Pavlov Shack server.

Snapshots of course are about images of your system - in this case your Shell - at a given point in time. Apparently I don't have any, probably because I recently re-installed, and which I assume erased any previously existing Snapshots.



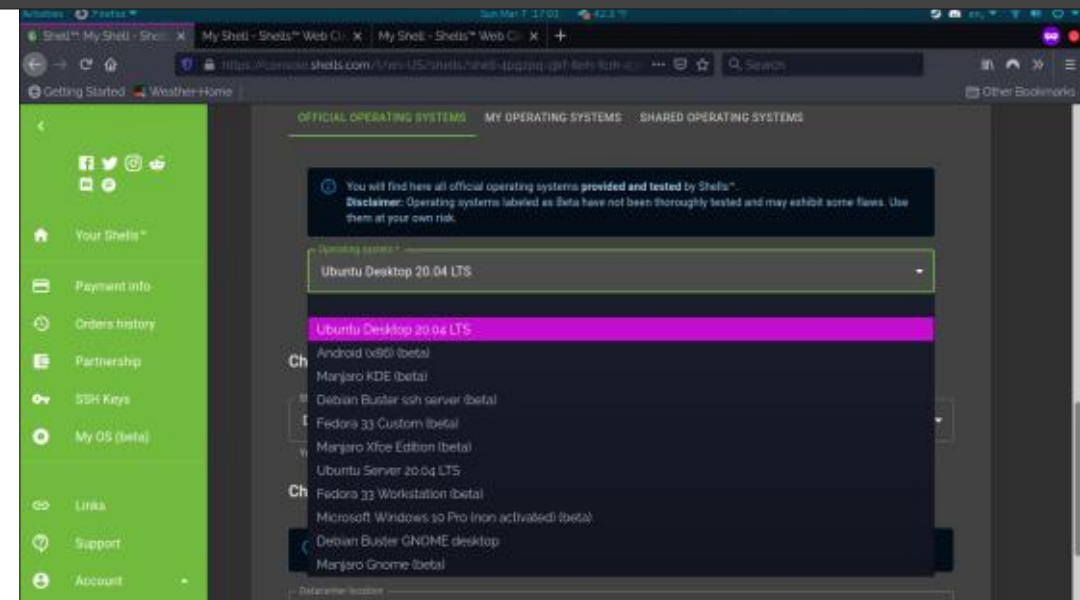
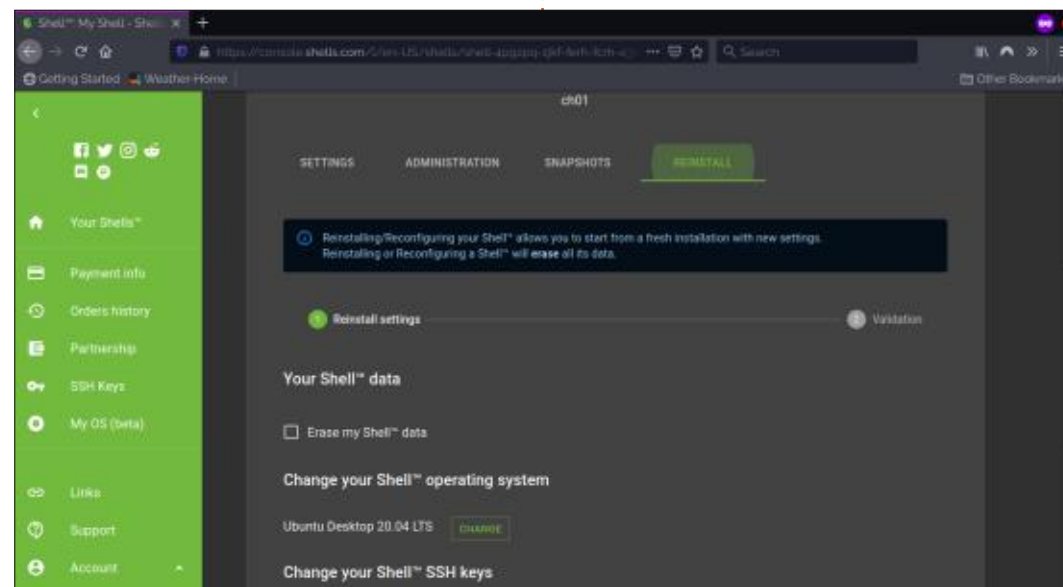
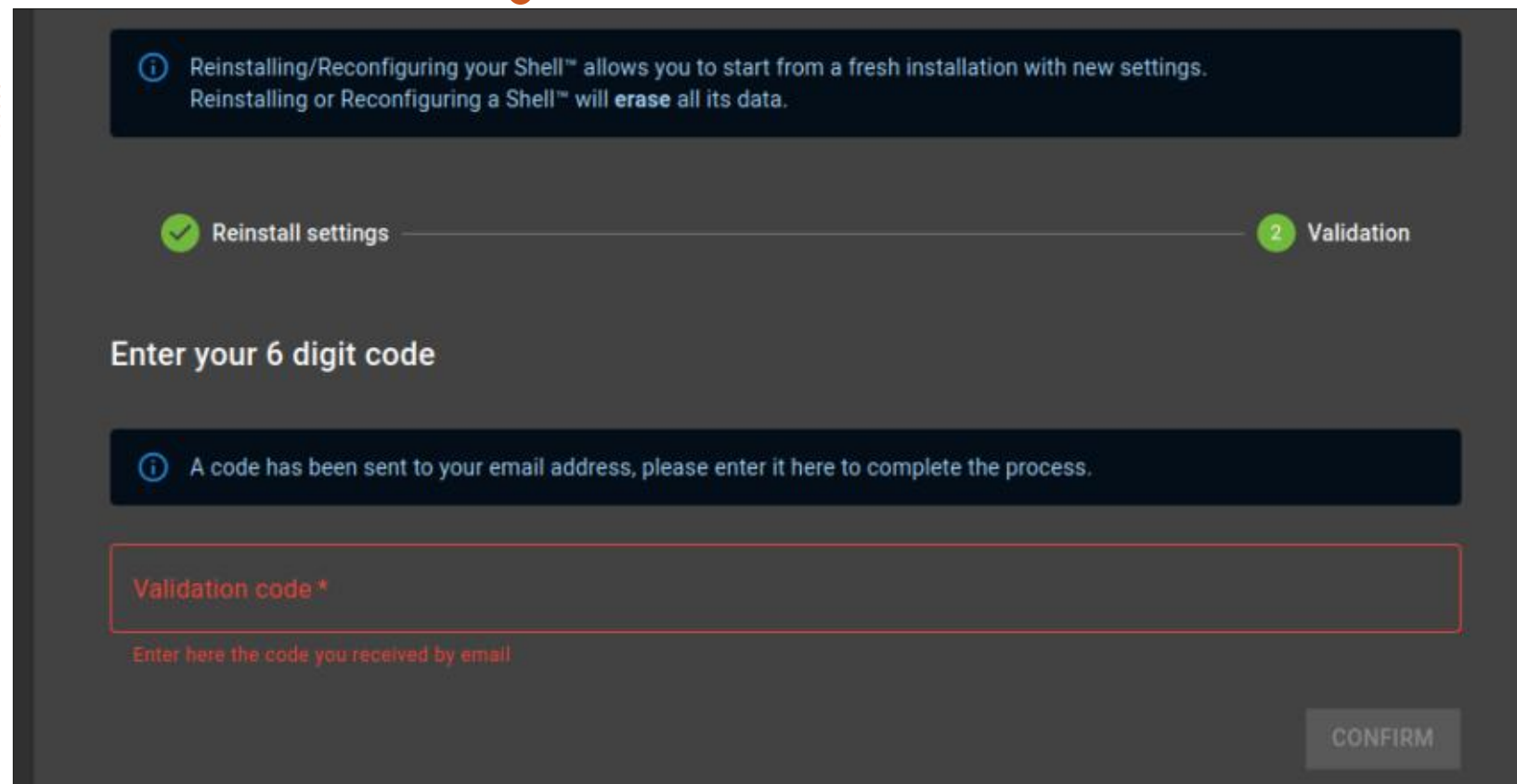
Finally, we come to Reinstall (next page, bottom left and right). Which is what I have found myself doing the most. It is, compared to installing a normal GNU/Linux installation, incredibly easy. Currently only Ubuntu 20.04 and Debian Buster Gnome are out of 'Beta', but several other GNU/Linux distros are officially available for

'testing' and seem to work fine. I ran Manjaro KDE, Manjaro XFCE, and Fedora Custom for at least a couple of days – each without issue. I haven't run any of them on a physical system in several years, and they all seemed to run fine on Shells, so I'm not sure what is keeping any of them in 'beta'.

In any case, after selecting your

preferred Operating System, simply click "Next", check your email for the Validation Code, enter it, and click Confirm. Within a couple of minutes, your new Operating System will be installed and you will be able to launch it from Your Shells.

For much of the last month, I haven't quite known what to do with my Shells.com account, as, like many people, due to the CoronaVirus, I have been rarely leaving my house. I did find it useful to have an Ubuntu 20.04 installation for helping walk people through installing a Pavlov Shack server, as I have moved my family's gaming system to openSUSE Tumbleweed recently.

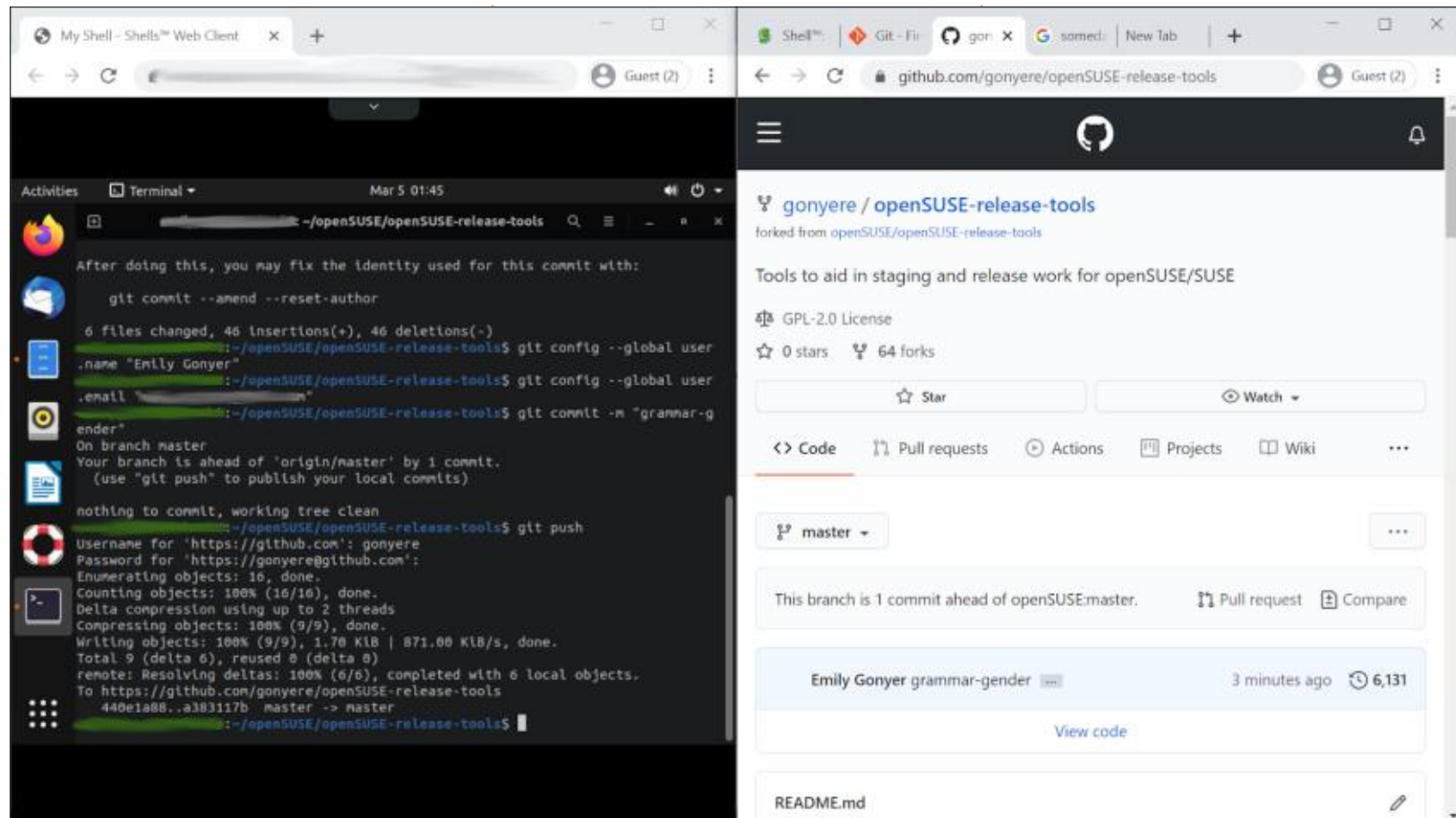
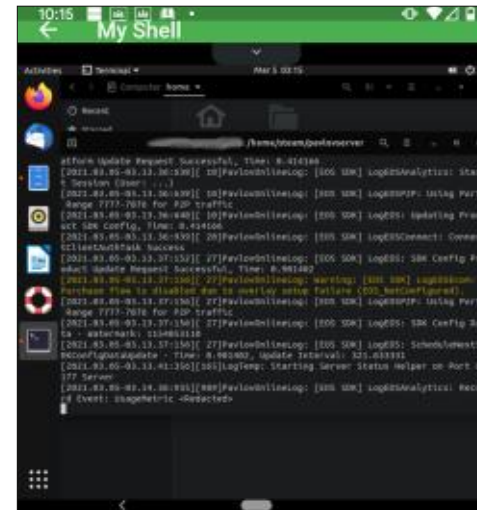


However, recently I found myself using my Shells account for actual development. My son was playing Rust on my main Tumbleweed system, and I found myself with access to the Windows 10 box upstairs. So, logging into Shells, I had full access to a GNU/Linux system, I was able to pull from github, clone my repos, and work as normal.

In the end, my only real 'complaint' (as it were) with Shells has been the inability to install any version of GNU/Linux that I would like. It seems that they have recently added a 'custom operating system' option, but I am not quite sure how that works, or how you would go about uploading your own image.

Tomorrow, my Shells account will end. I doubt that I will subscribe, since I for one rarely find myself leaving home these days. But for anyone who finds themselves regularly moving around, and using public computers, or perhaps finds themselves at a different system than their own, I can see how a Shells account could easily fill a need. It has been a lot of fun for

me over the last month as well - and the simple ability to play and know that I am not going to break my own system has been liberating. And that, even if I do manage to break something, 're-installing' is just a matter of a handful of keystrokes and a quick 2FA away.

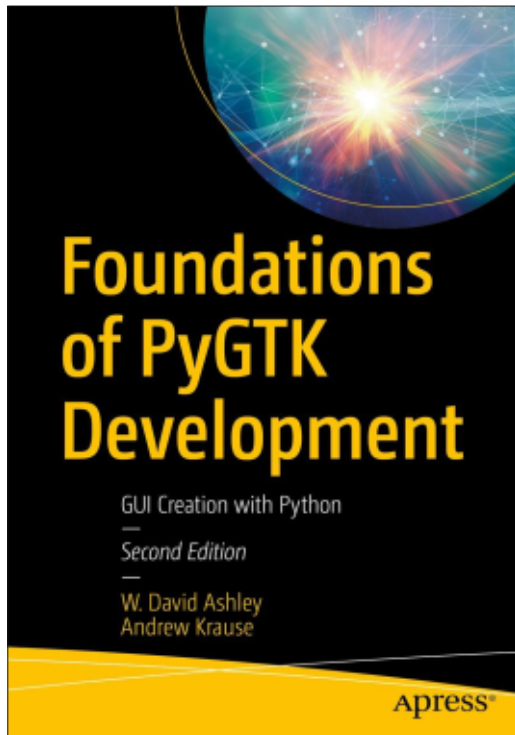




BOOK REVIEW

Written by Erik

Foundations of PyGTK Dev



Foundations of PyGTK Development: GUI Creation with Python

Authors: Ashley, W. David, Krause, Andrew

Website: <https://www.apress.com/gp/book/9781484241783>

Price: 26.99 Euro

From the website: *Learn how to develop portable GUI programs to run on multiple operating systems.*

Revised and updated from the popular original, with a full set of new examples in Python and using PyGTK, this book provides all the information you'll need to write easy or complex GUI applications, offering one source of knowledge and best practices for user interface creation.

Whilst trying to figure out Glade 3.22, I saw this book mentioned as the authority on using it, so naturally I made a plan to get my hands on it. I could not wait to wade into this sea of information, or at least get my toes wet. You see, I found glade to be confusing at best, compared to other visual editors that are easy to use, like Lazarus.

The first chapter gives us info about GTK 2 and 3, but feels like 'faffing' around. I get the impression the authors are people set in their ways (I almost said fuddie-duddies!) who now have to remember what it was like when they learned something. Stuff is thrown out there without context given. Okay, maybe it's just me,

let's move on. The next chapter we are told that The Gtk.Application and Gtk.ApplicationWindow classes are the foundations of the book and will be explained in detail.

Good. This is the first line: "Gtk.Application is the base class of a GTK application. Its primary purpose is to separate your program from Python __main__ function, which is a Python implementation detail." - Immediately it feels like a book I am not going to finish. I am definitely not the intended audience (even though I feel I am 'foundations -worthy.) The book does not read easy or flow nicely for one to understand. I finished the rest of the chapter easily enough. On to chapter three.

"Some simple GTK applications". Instead of simple applications, we get Hello World... As someone with no experience in GTK I was led to believe in the beginning that I did not need to know anything, but it just becomes clearer to me this book is actually aimed at someone with years of GTK 2 experience making their way to GTK3.

Throwing in "Hello World" does not

a beginner make.

The "extending the hello world application" part was quite interesting – with a totally uninteresting base. Although the "application" is simple and I want to learn badly, there is just no context for me. Here is an explanation:

"window.set_transient_for(parent) You can set the icon that appears in the taskbar and title bar of the window by calling window.set_icon_from_file(). The size of the icon does not matter, because it is resized when the desired size is known. This allows the scaled icon to have best quality."

This reads more like a 'manpage' and less like a book. Chewing on dry cardboard will keep my attention longer. Even though I desperately want to learn this, the style, the boring examples and numbing slog, made me end it after chapter three. I am not a sadist and am not going to torture myself. For a "Foundations" book, it's a zero on a report card for me. Constant

references to GTK2 the whole time also meant nothing to me, it's supposed to be a 'teach me', not 'reference me', book.

I am so wasted by the end of chapter three, I could not even be bothered to find out who the authors are. (Sorry, but I am totally NAAFI now.)

I am sorry to say, but this feels like lazy writing. It feels like there was no plan to "teach", but more to flesh out manpages. At 600 bucks locally (NAD, or \$42 USD), it is very expensive and I will not recommend it to anyone.

This book gets one star.



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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[ubuntuforums.org/
forumdisplay.php?f=270](https://ubuntuforums.org/forumdisplay.php?f=270)

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.

NOTE: Guys, with the latest Google hack, my Gmail accounts are all in limbo, if you sent me any messages there, I will get to those only when it unfreezes again.

I was once chased from a customer's premises by a manager who had no clue about privacy. He was one of those people who expected everything to be instantaneous. No lead time; you get a PC and it must be ready for the user in 10 minutes. They

used Skype to chat among themselves. From an IT point of view, we installed Skype for them, with all their other applications. and the user would create their own account with their cellphone number as username. We usually take no part in this, because if you set it up for them, you get endless phone calls asking "What is my password?" Also, it is a privacy issue, as IT should not know your passwords. (Someone could threaten their supervisor with death threats and then you are involved - yes it has happened before! Long story...). His argument was, how can we expect them to make their own Skype account, it was OUR jobs!! You don't contact your solicitor and get him/her to sign your lease agreement. Imagine screaming at him/her that it was his/her job as it was a legal matter. Imagine shouting at your doctor for not providing pills as you don't want to go to the pharmacy? It is the doctor's job!! So why do we allow this kind of thing in the IT industry? This is probably why Windows is still the top choice as a desktop for business. People don't

want to think for themselves and, in the end, they have only themselves to blame. Technology is not infallible. Privacy is a real thing. As Linux people, you are probably a LOT smarter than you give yourselves credit for. You have learned to do your own thing. You have discovered the joy of thinking for yourselves. I salute you!

Q : Hey guys, I have a frustrating problem. I transfer files from work to home via USB stick. At work, we have Sophos, and other junk, that constantly keep the USB busy, so I just unplug. "The drive is busy and cannot be ejected" message never seems to go away. Life is too short and I blame Windows 10. The thing is, when I get home and want to use it in Ubuntu, I can read from it, but not write. I have to plug / unplug like a lot of times and sometimes that seems to work. Is there another way to do this, other than going to my wife's Pc and doing a Windows repair on the USB stick?

A : There is a way, simply open the "disks" utility on your Ubuntu machine, hit the "stop" icon and select the repair option from the gear icon. Once done, click the "play" icon and you should be good.

Q : My uncle donated me HP Laserjet P1102w. I do not have a CD. How can I install HP Laserjet P1102w on Ubuntu 14? CUPS see printer, but not printing.

A : Usually the issue is related to hplip, if you don't have it installed, install it, if you do, reinstall it. Once done run hp-setup again.

Q : New to this stuff, man, how do i get a .bin file to work?

A : First be sure you DO want to run it. Then right-click the file and go to "properties", then the "permissions" tab, and allow executing. Otherwise open a terminal and use:
`chmod +x <file>`

Q : I have loaded Ubuntu 20.04 in WSL on my Windows machine, but it is taking up all my memory. It is worse than Chrome. Why is that?

A : Linux treats memory in a different way than Windows. That is one of the reasons it runs better on old hardware. If you want to constrain Ubuntu, you need to tell Windows that. Make a .wslconfig file with the amount of memory you want to give it.

Q : Here goes, if I install an app via the terminal with `sudo apt-get install`, and I later remove it with `sudo apt-get remove` I find leftovers in my home folder in hidden files. It reminds me of the Windows registry that just keeps junk. How can I keep my Ubuntu clean? I am on an old Ubuntu that I like and I don't want to mess it up.

A : I am not sure what you are asking but if you use `apt-get purge` instead of `remove`, it should purge all the configuration files too.

Q : My current Ubuntu install is on a 128GB Seagate SSD. I have

just got a 256GB Samsung SSD. I want to copy it across without losing everything that took so long to set up. I realize I can just install Ubuntu 20.04 on the new drive and copy my /home folder, but I am scared I will lose something that stored its configuration elsewhere. What is my best option?

A : Get a bootable copy of Macrium reflect (it is free) and boot with it. Clone your old drive to the new one and use the entire new drive. Look here: <https://www.youtube.com/watch?v=ogwACNeyz2g> - it is for Windows, but the principle is the same.

Q : I just installed Ubuntu 18.04 on my son's computer. It is a sale item from work where they have removed Windows and everything on the hard drive. I want to install Secret Maryo Chronicles for him, but even adding the PPA, I can't get it to install. I get: `smc no such package`. I feel rather stupid at this point. Can you help?

A : You are actually the third person to ask in a short while. Secret Maryo Chronicles has been discontinued. Don't bother. You can

let him play the clone of the clone on gamejolt in HTML5. Keep your peepers peeled and I will do an article in the magazine for you guys.

Q : I am new to all this Ubuntu stuff. I wanted to install Clementine via the software center, but I see more than one Clementine. Is one like SD and one HD or something? Or is one just newer than the other?

A : You will usually see more than one if you installed another store like Flathub or the Snap store. Just look carefully and it will tell you which is which.

Q : hai. I am using Xubuntu and somehow my icons have become corrupt. How to fix?

A : Switch to a different icon set, reboot, and switch back. IF it does not work, come back to me. (Settings->Appearance->icons).

Q : I was trying to make a truth table for uni in LibreOffice calc. The thing that drives me wild is when I type true, it immediately

changes to TRUE. I did not capitalize it, it does it on its own. I am on Ubuntu Gnome 20.04. Someone said I should put a ` - thingy in there, but I just want true, not with the thingy.

A : Like most spreadsheets, you need to prefix anything that changes with a single quotation mark. (Not a backtick).

Q : I have a bit of a problem. I am using Ubuntu 18.04 with gravit designer. My friend gave me a design she made, but when I open it, it says replace fonts, then everything is messed up. How can I open it without replacing the fonts? If I choose no, then they disappear.

A : First, replace the fonts, then ask your friend which font it was. You need to download that font and install it on your machine. Then, you need to import it inside of Gravit Designer, under system fonts. Once you have the fonts installed, open the document she gave you again. If you already saved it, highlight the fonts and replace them.

Q&A

Q : I recently switched to Windows 10 from Ubuntu 16.04. (I had Windows 8 before). I have been noticing that Windows 10 now just randomly disconnects my Wifi. Sometimes it still shows connected, but isn't, then I have to disable and re-enable the card to work. Could it be that Ubuntu damaged my Wifi card?

A : Nope. Windows 10 is just garbage. I have the same issue with a Windows laptop that never saw Ubuntu.

Q : Hello. I have two laptops, HP with 1366x768 display, and a Dell with 1920x1080 display. The Dell has a small SSD and the HP has a 1TB drive. I want to play a movie from my HP to my Dell with HDMI. The movie is in 1080p. I just can't get it to work. Is it because one is Ubuntu 18.04.5 and the other is Ubuntu 20.04?

A : I am 99% sure it is because laptops have only HDMI out, not in. It has nothing to do with the OS. Rather stream it over the network to the Dell with VLC.

Q : I am using Ubuntu studio on my laptop since January. When I open the lid to continue where I left off, Firefox asks me for my master password. This never happened with Windows. I am not sure what is causing this but I hope I don't have some virus.

A : You possibly have a tab in Firefox that is requesting a password. You can simply say no. If in doubt, decline.

Q : Thanks for your help last time, I learned a lot. I have another question. I just need to add a disclaimer to the end of a bunch of text files. Instead of me opening each one in Kate and copy-paste each time, is there a better way, maybe batch edit?

A : I do not know about batch editing, I would script something to just append it to each file in the folder. See: <https://techstop.github.io/redirect-append-to-file/>

Q : I have customized my Ubuntu quite a lot. I want to make my own .iso of my custom install to write to CD. Almost like a respin. Is

there some online app or website to do this or can I do it at home on my own PC?

A : I suggest looking at Cubic. I'll give you a link, it's a bit dated, but should guide you through: <https://askubuntu.com/questions/741753/how-to-use-cubic-to-create-a-custom-ubuntu-live-cd-image/741770#741770>

Q : I just can't get a straight answer and it is annoying me. I tried to install pygame on Ubuntu 18.04. I open Thonny and execute: import pygame as p. I get 'pygame not found'. I have installed stuff from tutorials left and right, but nothing seems to work. I even installed it like Windows, but the error is there regardless, but if I run pygame aliens, I get stuff happening. So it looks like I should do everything in sudo?

A : This is a tough one, as I see on their github, there is advice, but it only sort of applies to you. Have you checked Thonny's options -> interpreter and chose python3? (Choose your version of Python 3).

Q : This is the fourth time Windows has uninstalled all my software. I am done. Done, I tell you! I need to get Ubuntu on, but keep my files and applications, how do I do that?

A : There are two ways, one, shrink your drive and make a new partition, and copy your data there before installing Ubuntu on the other partition, but it is more advanced. Two, back your data up to an external device and install Ubuntu using the entire drive. One word of caution – not all Windows applications have Linux installs, so you may need alternatives. Check your applications on <https://alternative.to> - and filter by Linux.

Q : Ishmael, [03.02.21 19:20] Hey guy, you advice succ.

A : Successful? Succeed? Succinct? I try my best. ;)



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



Website: <https://www.urtuk.com/>

Price: \$17.99 USD GOG / STEAM

Blurb: *"Urtuk is an open world, tactical turn-based RPG in a low-fantasy setting. Guide your band of adventurers through the ruins of an ancient world. Recruit new followers, loot the corpses of your fallen foes, and do your best to survive in this harsh and unforgiving realm."*

This game is finally out of early access, yay! Currently on a 10% discount.

The very first thing that jumps out at you when starting this game is the epic music. Have a listen here: <https://www.youtube.com/watch?v=kfgxPsnp7Fk>

As you can see, there is not much to look at and the art is almost a darkest dungeon style (pardon my screen-shots as my 1366x768 display caused some banding). Transylvania / Barovia is what came to mind, and indeed,

the developer is from Slovakia, steeped in Slavic myths.

There is a story here. You are Urtuk. You have been experimented on by an alchemist. You get rescued by your friend, but you have mutated. You need medicine, which is nigh on impossible to attain. Playing the game, I could not help but think of HoMM 3 (heroes of might and magic III). You have an overworld map to traverse, the combat is hex tiles. The difference here is that terrain plays a part. Where elevation is preferable to strike

from (always take the high ground), as well as push enemies into spikes, for instance. Instead of a hero with an army, you just lay the army, a-la Tactics Ogre.

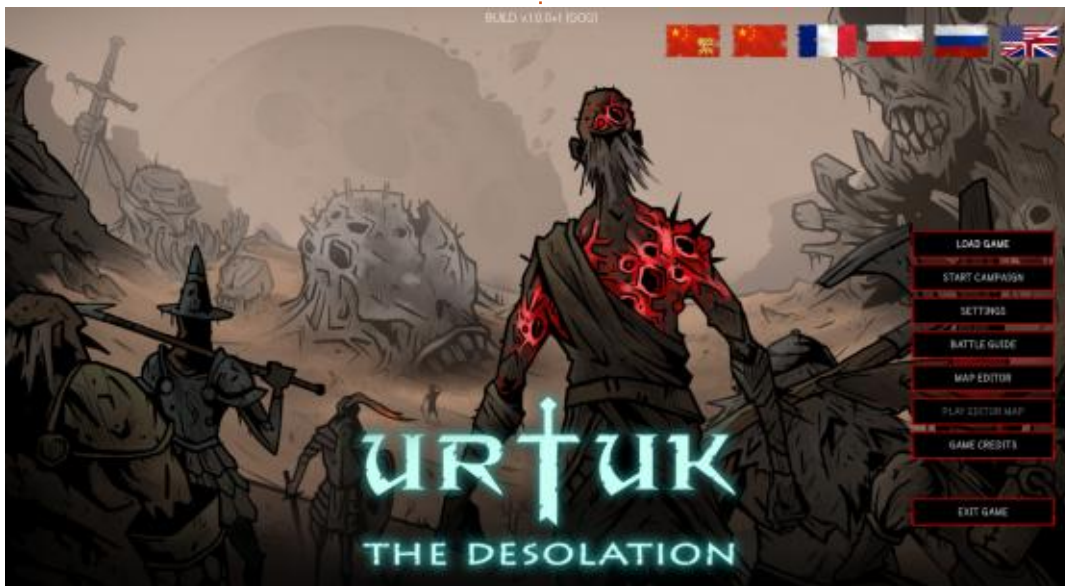
When they say it is a "survival rpg" the emphasis is on survival.

You start with picking your characters, or rather character classes as well as three items. Though some Character classes can equip the same stuff, they are unique. There is no dual classing or any mixing. You start with a party of three, and even if your rescuer

survives, he stays behind to cover your escape. For the review I went with the default, though you can mix and match your party as you wish. The items you can choose seem to be randomized, and I did not RTM, I picked three that seemed useful.

Though you seek to be cured of your mutation, mutations seem to play a key role in the game. Mutation effects are triggered on critical hits, so it is 'critical' that you get those :) You seem to be limited to three mutations per character. The mutations seem to be level-based, or they, too, level up (I only got the game yesterday, but am enjoying the heck out of it). You have a choice of four levels to begin with, exploration, adventure, veteran, epic, and on top of that you get to choose if you would like ironman-mode too.

Starting the game, Urtuk's spells did not seem to work on anyone but himself, and they were all negative to his health. By default he is a priest, but you may choose another class.



Because combat is turn-based and played on a hex grid, speed is important, as it determines when your turn is. As mentioned before, the battlefield is littered with ups and downs and traps, like spikes. Other than your first battleground, it looks like battlegrounds are procedurally generated, which is awesome for replayability. This allows the tactician in you to funnel enemies into tight spaces to negate their numbers, for instance. Though the maps are varied, you will come across similar ones, as there are lots of battles to be fought. Most times, your choices will be move, wait, attack, special 1, and maybe special 2.

This may get tedious later on, but, at the moment, the game is new and shiny. That may be the case with the battlefields too as there is a lot of detail, repeated quite a lot. This is mitigated by the mission type, I have not yet discovered them all, but I hope there are a lot. For instance you get to rescue some retreating soldiers early on, and you can take a village to produce a resource for you.

On top of all that there are “focussed” abilities, that sort of build up to use. Some of the mutations are dependent on focussed abilities, so you need to be aware of the combinations that you choose. The icons for these focussed abilities are bizarre,

looking like organs from fantasy creatures. These are a bit confusing to the novice player.

The overworld map seems small and very lovingly detailed, but I have heard there are multiple maps to play on (I am still stuck on the first one). This is great news. Speaking of locations, some locations contain bosses and not all battles are focussed on defeating every other enemy, just so you know.

The story is paper-thin at best, and does not really develop into an epic tale. That would have made this game a superstar (yes, I am a bit of a story gamer, I admit it). The setting is what makes this game

with its weird / different “magic-system” (if you will), and dark, almost Gothic, fantasy backgrounds. The pick-n-mix characters are also a breath of fresh air. The art is bordering on ugly, but somehow suits the game, down to the spider legs they all seem to walk on.

I can see the game getting repetitive very quickly. The lack of story development means you will get bogged down in the combat very quickly. The characters also seem a bit of a mish-mash without a reason to “gel” together. Maybe the game needs some lore or something, I am not sure what, to tie it together. Overall, the game is great fun, but there is something



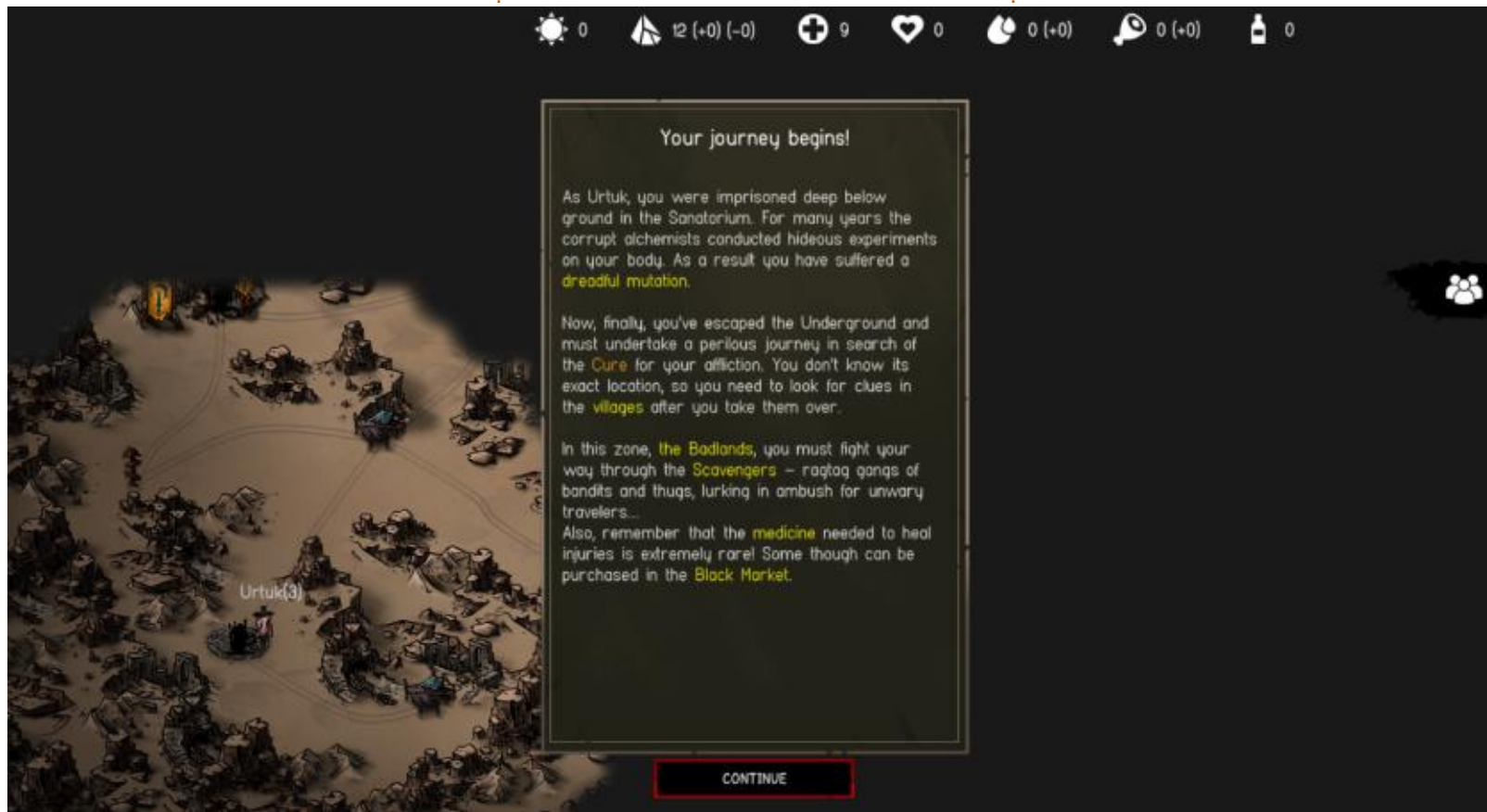
missing, I just can't put my finger on.

I saw somewhere (press release maybe?) that the game is about 8 hours long. I will warn you to budget ten times that. You can definitely re-play. While I am not a turn-based game guru, this is more fun than Darkest Dungeon for me.

There is definitely fun to be had here, with interesting characters

and world building. If you have \$17.99 lying about, you could do worse than this game.

I ran this on my potato laptop to judge the intensity, but it ran quite happily on integrated Intel graphics, but I do suggest a better resolution than 1366 x 768 in windowed mode (there is a bit of loading time at the first start-up). I ran it windowed as the game refused to let me take screenshots in full-screen mode.



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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