



Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

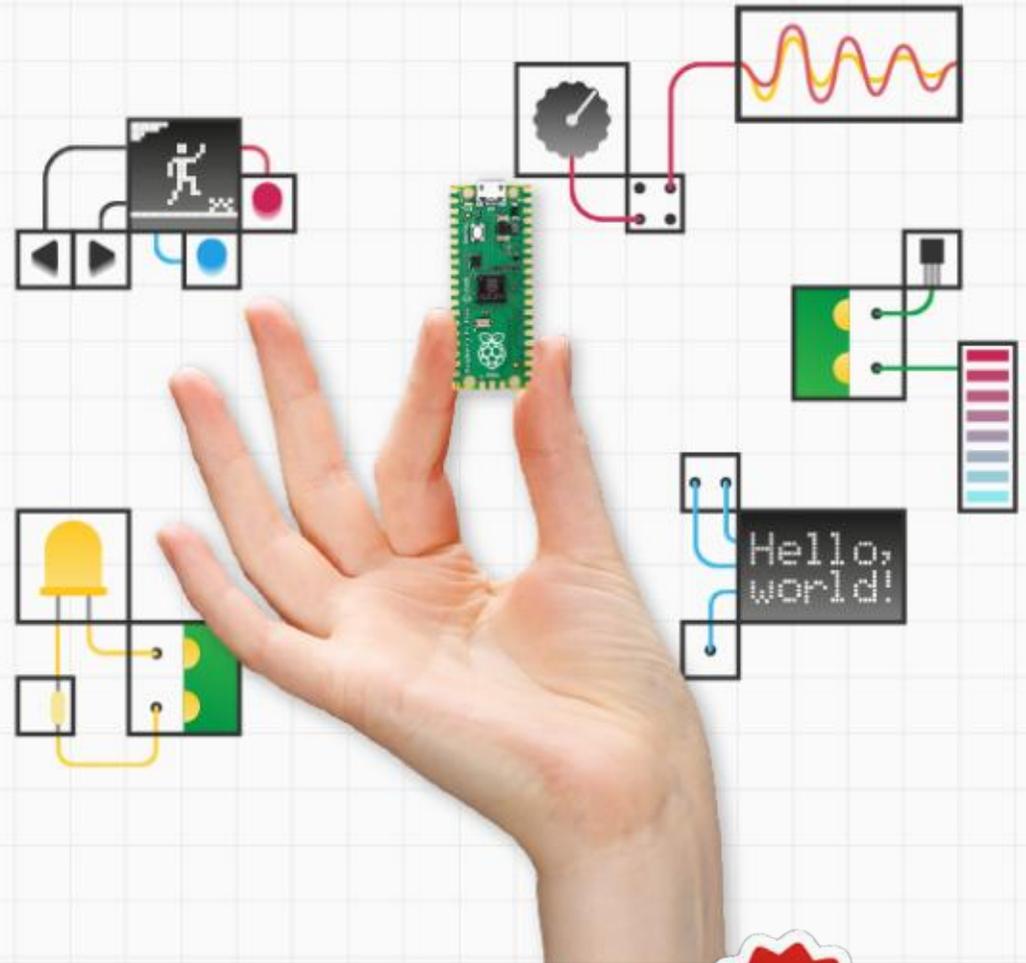
ISSUE #167 - March 2021



Raspberry Pi Pico

The flexible \$4 microcontroller board

from Raspberry Pi. Raspberry Pi Pico is a tiny, fast, and versatile board built using RP2040, a brand new microcontroller chip designed by Raspberry Pi in the UK



MICRO THIS, MICRO THAT

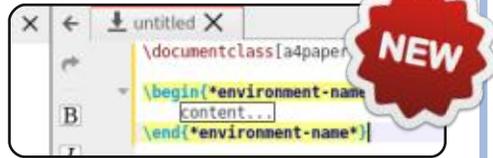
PROGRAMMING THE RASPBERRY PI PICO



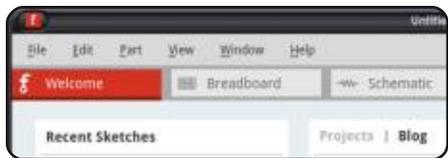
HowTo



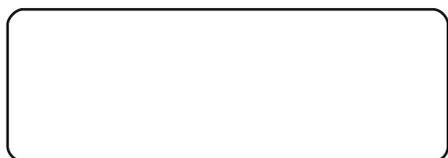
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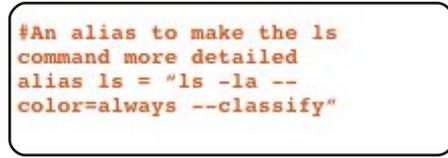
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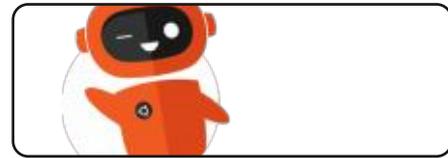


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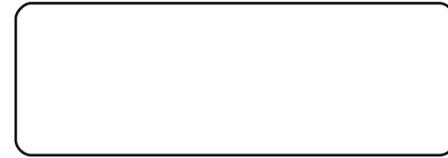
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WELCOME TO THE LATEST ISSUE OF FULL CIRCLE

In this month's issue we have more Python, more Inkscape, and new things! Erik is starting a new series on Latex, and Greg is starting a new (second!) series about the myriad of microcontrollers out there. Specifically the Raspberry Pi Pico. If you haven't heard of the Pico, it's about 3" x 1" and comes in at under £5 GBP. An absolute bargain.

Elsewhere, we have my review of the **Entroware Ares** all-in-one unit that I ordered last month. Is it worth it? Read on! Erik has also supplied a quick look at Fritzing. For all your circuitry needs. Richard continues to research retro emulation and SJ is back with a brief look back (loopback?) at his own story.

Next issue marks **fourteen years** (!) of FCM! I'd love to know how you found FCM. How long have you been reading? What have been your favourite articles? I'd like to feature some of these stories next month.

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.

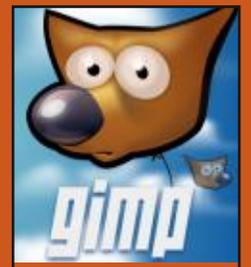
Anyway, stay safe, and all the best for 2021!

Ronnie

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PALE MOON 29.1 BROWSER RELEASED: 03/02/2021

Pale Moon 29.1 web browser is now available, a fork of the Firefox codebase to provide better performance, preserve the classic interface, minimize memory consumption, and provide additional customization options. Pale Moon binaries are built for Windows and Linux (x86 and x86_64). The project code is distributed under the MPLv2 license (Mozilla Public License).

The project adheres to the classic layout of the interface, without switching to the Australis interface integrated into Firefox 29, and providing ample customization options. Remote components include DRM, Social API, WebRTC, PDF viewer, Crash Reporter, code for collecting statistics, parental controls, and people with disabilities. Compared to Firefox, the browser retains support for XUL technology and retains the ability to use both full-fledged and

lightweight themes. Pale Moon is built on the UXP (Unified XUL Platform) platform, within which the Firefox components are forked from the Mozilla Central repository, free of bindings to the Rust code and not including any of the work of the Quantum project.

<https://forum.palemoon.org/viewtopic.php?t=26327&p=210045>

LINUX FROM SCRATCH 10.1 AND BEYOND LINUX FROM SCRATCH 10.1 RELEASED: 03/02/2021

New editions of Linux the From Scratch 10.1 (LFS) and of Beyond the Linux the From Scratch the 10.1 (BLFS), as well as editions of LFS and BLFS with systemd. Linux From Scratch provides instructions for building a basic Linux system from scratch using only the source code of the required software. Beyond Linux From Scratch complements LFS instructions with information on building and configuring about

1000 software packages covering a variety of applications, from DBMS and server systems to graphical shells and media players.

Linux From Scratch 10.1 Implemented transition to Glibc 2.33, kernel Linux 5.10.17, SysVinit 2.98 and Systemd 247. Updated 40 packages, including Binutils 2.36.1, Autoconf 2.71, Bash 5.1, Eudev 3.2.10, Grep 3.6, Inetutils 2.0, IPRoute2 5.10.0, Meson 0.57.1, Perl 5.32.1, Python 3.9.2, Tar 1.34, Tcl 8.6.11, Util-Linux 2.36.2, Vim 8.2.2433, Zstd 1.4.8. Errors in loading scripts were fixed, editorial work was done in manuals.

<http://lists.linuxfromscratch.org/pipermail/lfs-support/2021-March/054136.html>

FEDORA AND GENTOO DITCH MAINTENANCE OF TELEGRAM DESKTOP PACKAGES: 03/02/2021

Telegram Desktop package maintainer for Fedora and RPM Fusion said they would be removing the packages from the repositories. The day before, end of support for Telegram Desktop was also announced by the Gentoo package maintainer. In both cases, it was declared that they are ready to return packages to the repositories in case a new maintainer is found for them, ready to take the maintenance into their own hands.

The reasons for the refusal to support Telegram Desktop by the current maintainers are the repulsive and hostile attitude of developers who do not even try to figure out the errors that lead to problems with building from source in Linux distributions. Messages about such errors are immediately closed with the "WONTFIX" sign and a recommendation to use semi-proprietary binaries from the official site.

The other side of the conflict boils down to the fact that most of the messages about problems are irrelevant or quickly fixed, and the

disagreement lies in the reluctance to support old versions of Qt and dynamic linking with the tg_owt library on their own.

<https://lists.rpmfusion.org/archives/list/rpmfusion-developers@lists.rpmfusion.org/thread/5A7MRE3BG66PQXSP263FUZ7XS5PMDNUV/>

<https://archives.gentoo.org/gentoo-dev/message/d20d6ec5a06582782fcf17291a40d66f>

FISH SHELL 3.2 RELEASED: 03/01/2021

The interactive command shell fish 3.2.0 (friendly interactive shell) has been announced, developing as a more user-friendly alternative to bash and zsh. Fish supports features such as, syntax highlighting with automatic detection of input errors, suggestion of possible input options based on the history of past operations, autocompletion of options and commands using their descriptions in manuals, comfortable work out of the box

without the need for additional configuration, simplified scripting language, support for the X11 clipboard, convenient search tools in the history of operations performed. The project code is distributed under the GPLv2 license. Ready packages are generated for Ubuntu, Debian, Fedora, openSUSE and RHEL.

<https://sourceforge.net/p/fish/mailman/message/37230050/>

OPENSSH 8.5 RELEASED: 03.03.2021

After five months of development, the release of OpenSSH 8.5, an open client and server implementation for the SSH 2.0 and SFTP protocols, is ready.

In one of the upcoming releases, they plan to disable, by default, the ability to use the "ssh-rsa" public key digital signature algorithm, which is mentioned in the original RFC for the SSH protocol and remains widespread in practice.

<https://lists.mindrot.org/pipermail/openssh-unix-dev/2021-March/039185.html>

NOMADBSD 1.4: 03.03.2021

The NomadBSD 1.4 Live distribution is now available. This is a release of FreeBSD, adapted for use as a portable desktop that boots from a USB stick. The graphical environment is based on the Openbox window manager. DSBMD is used to mount drives (mounting CD9660, FAT, HFS+, NTFS, Ext2 / 3/4 is supported). The size of the boot image is 2.4 GB (x86_64).

<https://nomadbsd.org/index.html#1.4>

FREE HEROES OF MIGHT AND MAGIC II 0.9.1 RELEASED: 03/04/2021

A release of project "fheroes2 0.9.1" is available, trying to recreate the game Heroes of Might and Magic II. The project code is written in C++ and is distributed under the GPLv2 license. To start the game, you need the game

resources, which can be obtained, for example, from the demo version of Heroes of Might and Magic II.

<https://github.com/iithub/fheroes2/releases/tag/0.9.1>

ELECTRON 12.0.0: 03/05/2021

Electron 12.0.0 has been announced, which provides a self-contained framework for developing multi-platform user applications, using the Chromium, V8 and Node.js components as a basis. The significant change to the version number is due to the upgrade to the Chromium 89 codebase, the Node.js platform 14.16, and the V8 8.9 JavaScript engine.

<https://www.electronjs.org/blog/electron-12-0>

ONLYOFFICE DOCS 6.2 ONLINE EDITORS: 03/05/2021

A new release of OnlyOffice DocumentServer is available,

with a server implementation for OnlyOffice online editors and collaboration. Editors can be used to work with text documents, spreadsheets and presentations. The project code is distributed under the free license AGPLv3.

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

OnlyOffice claims full compatibility with MS Office and OpenDocument formats. Supported formats: DOC, DOCX, ODT, RTF, TXT, PDF, HTML, EPUB, XPS, DjVu, XLS, XLSX, ODS, CSV, PPT, PPTX, ODP. It is possible to expand the functionality of editors through plugins, for example, plugins are available for creating templates and adding videos from YouTube. Binaries are generated

for Windows and Linux (deb- and rpm-packages).

<https://www.onlyoffice.com/blog/2021/03/onlyoffice-docs-v6-2-with-data-validation-and-table-of-figures-released/>

RELEASE OF THE SYSTEMRESCUE 8.0.0: 03/06/2021

SystemRescue 8.0.0, a dedicated Live-distribution based off Arch Linux, designed to recover from a system failure. Xfce is used as a graphical environment. The size of the ISO image is 708 MB (amd64, i686).

The functional changes in the new version mention the update of the Xfce desktop to the 4.16 branch, the Linux 5.10 kernel and the inclusion in the paperkey package for printing private keys. The exfat-utils package has been replaced with a new set of utilities, exfatprogs, created after the exFAT driver was added to the Linux kernel. Updated versions parted 3.4, gparted 1.2.0, btrfs-progs 5.10.1, xfsprogs 5.10.0, e2fsprogs 1.46.2, nwipe 0.30, dislocker 0.7.3,

fsarchiver 0.8.6, Python 3.9.2 are also included.

<https://www.system-rescue.org/Changes-x86/>

CANONICAL PROMOTING UBUNTU AS A REPLACEMENT FOR CENTOS: 09.03.2021

Canonical has launched a campaign to promote Ubuntu as a replacement for CentOS on servers used in financial services companies. The initiative is driven by Red Hat's decision to stop releasing updates for classic CentOS 8 from December 31, 2021 in favor of the CentOS Stream test project.

While Red Hat Enterprise Linux and CentOS have both firmly established themselves in the financial services sector, fundamental changes in CentOS could push financial companies to rethink their operating system decisions.

<https://ubuntu.com//blog/why-is-ubuntu-linux-the-leading-choice-to-replace-centos-for-finserv-infrastructure>

SAMBA 4.14.0 RELEASED: 11.03.2021

Samba 4.14.0 is out, continuing along the development of the Samba 4 branch with a full-fledged implementation of a domain controller and Active Directory service, compatible with the implementation of Windows 2000 and capable of serving all versions of Windows clients supported by Microsoft, including Windows 10. Samba 4 is a multifunctional server product which also provides an implementation of a file server, print service, and identity server (winbind).

<https://lists.samba.org/archive/samba-announce/2021/000553.html>

APACHE NETBEANS IDE 12.3 RELEASED: 03/11/2021

The Apache Software Foundation's integrated development environment, NetBeans 12.3, which provides

support for Java SE programming languages, Java EE, PHP, C / C++, JavaScript and Groovy, is out. This is the seventh release made by the Apache Foundation since Oracle handed over the NetBeans code.

<https://blogs.apache.org/netbeans/entry/announce-apache-netbeans-12-3>

DECENTRALIZED MEDIA SHARING PLATFORM MEDIAGOBLIN 0.11:

11.03.2021

A new version of MediaGoblin has been announced, designed for hosting and sharing media content, including photos, videos, sound files, videos, 3D models and PDF documents. Unlike centralized services like Flickr and Picasa, the MediaGoblin platform is aimed at organizing the exchange of content without being tied to a specific service. They are using a model similar to StatusNet and pump.io, and making it possible to raise the server to its capacity. The project code is written in Python and is distributed under the AGPLv3 license.

In the new release, support for Python 2 has been discontinued, and now requires Python 3. The end of support for Python 2 has made it much easier to maintain the project and add new features. The code has been completely rewritten with the implementation of audio spectrograms.

<https://mediagoblin.org/news/mediagoblin-0.11.0-release.html>

THE OFFICIAL CONSOLE VERSION OF 7-ZIP FOR LINUX HAS BEEN RELEASED:

11.03.2021

Igor Pavlov released the official console version of 7-zip for Linux. The fact is that the p7zip project has not seen an update for five years. The official 7-zip for Linux is similar to p7zip, but not a copy. The difference between the projects is not mentioned. The program is released in versions for x86, x86-64, ARM and ARM64. 7-Zip Code License for Linux - GNU LGPL.

In addition to porting to Linux, improvements in 7-zip 21.01 (Windows) show performance improvements on ARM64 hardware

by leveraging specialized CPU instructions to speed up AES, CRC-32, SHA-1, and SHA-256 computations.

<https://sourceforge.net/p/sevenzip/discussion/45797/thread/cec5e63147/>

MESA 21.0, FREE IMPLEMENTATION OF OpenGL AND VULKAN:

12.03.2021

The first release of the Mesa 21.0.0 branch has an experimental status - soon the stable version 21.0.1 will be released. Mesa 21.0 introduces full OpenGL 4.6 support for the 965, iris (Intel), radeonsi (AMD), zink, and llvmpipe drivers. Support for OpenGL 4.5 is available for the GPU AMD (r600) and NVIDIA (nvc0), and OpenGL 4.3 to virgl (virtual the GPU Virgil3D for QEMU / KVM). Vulkan 1.2 is supported for Intel and AMD cards, and Vulkan 1.0 for VideoCore VI (Raspberry Pi 4).

<https://lists.freedesktop.org/archives/mesa-announce/2021-March/000622.html>

FLATPAK 1.10.2 UPDATE FIXES SANDBOX ISOLATION VULNERABILITY:

03/14/2021

A bug fix update is available for the Flatpak 1.10.2 self-contained package toolkit, which fixes CVE-2021-21381, that allows the author of an application package to bypass the sandbox isolation mode and gain access to files on the main system. The problem has been there since release 0.9.4.

The vulnerability is caused by a bug in the implementation of the "file forwarding" function, which allows manipulating the .desktop file to access resources in the external file system, that the running application is not allowed to access. When adding files with tags "@@" and "@@ u" in the Exec field, flatpak will consider that the specified target files were explicitly specified by the user and will automatically forward access to these files to the sandbox. The vulnerability could be exploited by the authors of malicious packages to gain access to external files,

despite the appearance of being launched in isolation mode.

<https://github.com/flatpak/flatpak/releases/tag/1.10.2>

CANONICAL TO RENEW UBUNTU 16.04 SUPPORT FOR PAID SUBSCRIBERS:

03/14/2021

Canonical has warned about the imminent expiration of a five-year period for updates for the Ubuntu 16.04 LTS distribution. Starting April 30, 2021, official public support for Ubuntu 16.04 will end. For users who do not have time to transfer their systems to Ubuntu 18.04 or 20.04, as well as for past LTS releases, the ESM (Extended Security Maintenance) program is offered, which extends

the publication of updates, as well as the elimination of vulnerabilities for the kernel and the most important system packages until April 2024. Access to ESM updates are limited to paid subscribers of technical support services.

<https://lists.ubuntu.com/archives/ubuntu-announce/2021-March/000266.html>

LEOCAD 21.03 RELEASED:

03/15/2021

LeoCAD 21.03 computer-aided design has been announced, designed to create virtual models assembled from parts for Lego designers. The program code is written in C++, using the Qt framework and is distributed under the GPLv2 license. Binaries are available for Linux (Applmage),

macOS and Windows

The program combines a simple interface that allows beginners to quickly get used to the process of creating models, with a rich set of options for advanced users, including tools for writing automation scripts and applying their textures. LeoCAD is compatible with LDraw tools. It can read and write designs in LDR and MPD formats, as well as load blocks from the LDraw library, which has about 10 thousand elements.

<https://github.com/leozide/leocad/releases/tag/v21.03>

GNU MES 0.23, A TOOLKIT FOR SELF-CONTAINED DISTRIBUTIONS:

03/15/2021

After a year of development, the GNU Mes 0.23 toolkit was released, providing a bootstrap process for GCC and allowing for a closed rebuild loop from source. The toolkit solves the problem of verified initial compiler assembly in distributions, breaking the chain of cyclic rebuilding.

GNU Mes offers a self-hosting Scheme interpreter written in C and a basic C compiler (MesCC) written in Scheme. Both components are mutually assembled. The Scheme interpreter makes it possible to build the MesCC C compiler, which then allows you to build a stripped-down version of the TinyCC compiler (tcc), which is already sufficient to build GCC, whew!

<https://www.mail-archive.com/info-gnu@gnu.org/msg02863.html>

UBUNTU TOUCH'S SIXTEENTH FIRMWARE UPDATE:

03/15/2021

The UBports project has published an OTA-16 (over-the-



DistroWatch.com

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

air) firmware update. The project is also developing an experimental port of the Unity 8 desktop, which has been renamed to Lomiri.

Update Ubuntu Touch OTA-16 is available for the OnePlus One smartphone, Fairphone 2, Nexus 4, Nexus 5, Nexus July 2013, Meizu MX4 / PRO 5, VollaPhone, Bq Aquaris E5 / E4.5 / M10, Sony Xperia X / XZ, OnePlus 3 / 3T, Xiaomi Redmi 4X, Huawei Nexus 6P, Sony Xperia Z4 Tablet, Google Pixel 3a, OnePlus Two, F(x)tec Pro1 / Pro1 X, Xiaomi Redmi Note 7 and Samsung Galaxy Note 4. This release began the assembly of stable releases for Xiaomi Mi A2 and Samsung Galaxy S3 Neo + devices (GT-I9301I). Separately, without the "OTA-16" tag, updates for Pine64 PinePhone and PineTab devices will soon be built.

<https://ubports.com/blog/ubports-blogs-news-1/post/ubuntu-touch-ota-16-release-3744>

APACHE OPENMEETINGS 6.0 WEB CONFERENCING SERVER

RELEASED:

03/16/2021

The Apache Software Foundation unveiled a web-conferencing server, Apache OpenMeetings 6.0. It allows you to organize audio and video conferencing on the Web, as well as collaboration and the exchange of messages between the parties. Webinars with one speaker and conferences with an arbitrary number of participants interacting with each other are supported. (One to many and many to many) The project code is written in Java and distributed under the Apache 2.0 license.

Additional features include: tools for integrating with a calendar-scheduler, sending individual or broadcast notifications or invitations, sharing files and documents, maintaining the address book of participants, keeping an event protocol, jointly scheduling tasks, broadcasting the output of running applications (screencast demonstration), and conducting polls.

<https://blogs.apache.org/openmeetings/entry/openmeetings-v6-0-0-security>

NEW RELEASE OF GIT:

03/16/2021

Git 2.31 distributed source code is now available. Git is one of the most popular, reliable and high-performance version control systems, providing flexible non-linear development tools based on branching and merging. To ensure the integrity of history and resistance to changes "retroactively", implicit hashing of the entire previous history in each commit is used. It is also possible to certify with digital signatures of the developers of individual tags and commits.

<https://lkml.org/lkml/2021/3/15/2413>

ALT WORKSTATION K 9.1:

03/16/2021

Alt Workstation K 9.1, equipped with a graphical environment based on KDE Plasma and designed

for corporate workplaces and personal use, is out. The OS is included in the Unified Register of Russian Programs and Databases.

The assemblies are prepared for the x86_64 architecture available as installation image (4.3 GB) and Live image (3.1 GB). The product is supplied under its own License Agreement, which provides an opportunity for free use by individuals, but legal entities are only allowed testing it.

The distribution is equipped with a graphical interface for configuring the system, including an authentication module (Active Directory and LDAP / Kerberos), setting and synchronizing time, managing users and groups, viewing system logs and adding printers. The package includes proprietary NVIDIA drivers instead of the free nouveau ones.

<http://www.basealt.ru/about/news/archive/view/novaja-versija-os-alt-rabochaja-stancija-k-91-adaptivn/>

A NEW WAY TO FIND COMPATIBLE COMPONENTS

LINUX COMPUTERS:

03/17/2021

A new way to search for compatible components, for upgrading your computer, is available using the hw-probe utility and a database of supported hardware from the Linux-Hardware.org project. The idea is quite simple - different users of the same computer model (or motherboard) can use different individual components for different reasons. If at least two people sent telemetry of the same computer model, then each of them can be offered a list of the components from the second one, as options for the upgrade.

This method does not require knowledge of computer specifications and special knowledge of the compatibility of individual components - you just select those components that have already been installed and tested by other users or a vendor on the same computer.

Upgrading a computer or laptop traditionally causes difficulties and

errors for various reasons: architectural incompatibility (difference in chipset generations, differences in the set and generations of slots for equipment, etc.), "vendor locks" (binding to a supplier), incompatibility of some components of different manufacturers (for example, Samsung SSD drives with AMD AM2 / AM3 motherboards), etc. This should assist you in selecting tried and tested components.

<https://github.com/linuxhw/hw-probe/>

SOLARIS 11.4 SRU31

AVAILABLE:

03/17/2021

Oracle has published the Solaris 11.4 SRU 31 (Support Repository Update) OS update, which offers a series of fixes and improvements for the Solaris 11.4 branch. To install the fixes proposed, simply run the 'pkg update' command.

The new release denotes only the update of programs with the elimination of vulnerabilities: BIND 9.11.28, Firefox 78.8.0esr, PHP

7.4.15, Pillow 8.1.0, Thunderbird 78.8.0, dnsmasq 2.84, libproxy 0.4.16, openjpeg 2.4.0, openldap 2.4.57, pylxml4.6.2 and python-mod / cryptography.

<https://blogs.oracle.com/solaris/announcing-oracle-solaris-114-sru31>

AUDACITY 3.0 SOUND

EDITOR RELEASED:

03/17/2021

Version 3.0, of the free audio editor Audacity, has been released. It provides tools for editing audio files (Ogg Vorbis, FLAC, MP3 and WAV), recording and digitizing audio, changing the parameters of an audio file, overlaying tracks and applying effects (for example, noise suppression, changing the tempo and tone). Audacity code is distributed under the GPL license, binaries are available for Linux, Windows and macOS.

<https://www.audacityteam.org/audacity-3-0-0-released/>

QLITE 3.35 DATABASE

RELEASED:

03/18/2021

The release of SQLite 3.35, lightweight DBMS, designed as a plug-in library has been published. SQLite code is distributed as a public domain, i.e. can be used without restrictions and free of charge for any purpose. SQLite developers are financially supported by a specially created consortium of companies such as Adobe, Oracle, Mozilla, Bentley and Bloomberg.

<https://www.sqlite.org/changes.html>

LINKS 2.22 RELEASED:

03/19/2021

The minimalistic web browser, Links 2.22, has been released. It supports both console and graphical modes. In console mode, it is possible to display colors and control the mouse, if this is supported by the terminal used (for example, xterm). Graphics mode supports image output and font anti-aliasing. In all modes, the display of tables and frames are

provided. The browser supports the HTML 4.0 specification but ignores CSS and JavaScript. There is also support for bookmarks, SSL / TLS, background downloads, and menu-driven control. When working, links consumes about 2.5 MB of RAM in text mode and 4.5 MB in graphics mode.

<http://links.twibright.com/download.php>

D-LINK JOINS LINUX PATENT PROTECTION INITIATIVE:

03/19/2021

D-link just got included in the number of participants in the organization of the Open Invention the Network (OIN). This helps protect the Linux ecosystem from patent claims. It is noted that over 70% of D-Link's networking and communications products are initially implemented using open source software. The company continues to advocate open source software and no patent aggression, and is committed to contributing to the OIN community to drive innovation.

OIN members are committed

not to make patent claims and are free to authorize the use of patented technologies in projects related to the Linux ecosystem. OIN members include more than 3,300 companies, communities and organizations that have signed licensing agreements for the sharing of patents. Among the main OIN participants, providing the formation of a patent pool protecting Linux, are companies such as Google, IBM, NEC, Toyota, Renault, SUSE, Philips, Red Hat, Alibaba, HP, AT&T, Juniper, Facebook, Cisco, Casio, Huawei, Fujitsu, Sony and Microsoft.

The signatory companies gain access to the patents held by the OIN in exchange for an obligation not to sue for the use of technologies used in the Linux ecosystem. Among other things, as part of joining the OIN, Microsoft transferred the right to use more than 60 thousand of its patents, to OIN participants, pledging not to use them against Linux and open source software.

<https://openinventionnetwork.com/d-link-joins-oin-to-support-open-source-software/>

RETROSHARE 0.6.6 CONFIDENTIAL MESSAGING PLATFORM RELEASED:

03/20/2021

After two years of development, a new version of RetroShare has been released. It is a platform for confidential file and messaging using the encrypted Friend-to-Friend network. Binaries are available for Windows, FreeBSD and many GNU / Linux distributions. The source code for RetroShare is written in C++, using the Qt toolkit and is under the AGPLv3 license.

In addition to direct messaging, the program provides tools for chatting with multiple people, organizing voice and video calls, sending encrypted e-mail to network users, organizing file exchange with selected users or any network member (using technology similar to BitTorrent), creating decentralized forums with support for offline message writing, as well as creating channels for content delivery by subscription.

<https://retroshareteam.wordpress.com/2021/03/15/release-notes-for-v0-6-6/>

ONLYOFFICE DESKTOP SUITE 6.2:

03/20/2021

A new release of OnlyOffice Desktop is available, designed for working with text documents, spreadsheets and presentations. The editors are designed as desktop applications that are written in JavaScript using web technologies, but combine client and server components in one set, designed for use on the user's local system, without accessing an external service. The project code is distributed under the free license AGPLv3 .

<https://www.onlyoffice.com/blog/2021/03/onlyoffice-desktop-editors-v6-2-with-digital-signature-seafile-integration-and-more-is-released/>

FREE SOFTWARE FOUNDATION ANNOUNCED THE WINNERS OF THE ANNUAL AWARD FOR CONTRIBUTIONS TO THE DEVELOPMENT OF FREE SOFTWARE:

03/21/2021

LibrePlanet 2021, which was held online, like last year, hosted a virtual awards ceremony that announced the winners of the Free Software Foundation (FSF) annual Free Software Awards 2020. This is awarded to people who have made the most significant contribution to the development of free software. Software, as well as socially significant free projects. The commemorative plates and certificates awarded at the ceremony were sent to the winners by mail (the FSF award does not imply a monetary reward).

The Free Software Promotion and Development Award went to Bradley M. Kuhn, executive director and co-founder of the Software Freedom Conservancy (SFC). Bradley is known for his work in persuading people to comply

with the GPL, detecting GPL violations, and legally enforcing GPL compliance.

<https://www.fsf.org/news/free-software-awards-winners-announced-civicrm-bradley-kuhn-and-alyssa-rosenzweig>

FREE CAD RELEASE FREECAD 0.19

03/22/2021

After almost two years of development, the release of the open system for parametric 3D modeling FreeCAD 0.19 is officially available. The source code of the release was published on February 26, and then updated on March 12, but the official announcement of the release was delayed due to the unavailability of installation packages for all announced platforms. Today, a warning that the FreeCAD 0.19 branch is not officially ready yet and is under development has been removed and the release can now be considered complete. The current version on the site has also been changed from 0.18 to 0.19.1.

FreeCAD code is distributed

under the LGPLv2 license and is distinguished by flexible customization and functionality expansion through the connection of add-ons. Ready assemblies are prepared for Linux (ApplImage), macOS and Windows. The interface is built using the Qt library. Add-ons can be written in Python. Supports saving and loading models in various formats, including STEP, IGES and STL. Open CASCADE is used as a modeling kernel.

FreeCAD allows, by changing the parameters of the model, to play around with various design options and evaluate the work at various points in the development of the model. The project can act as a free replacement for commercial CAD systems such as CATIA, Solid Edge and SolidWorks. The system can be used in other areas, such as architectural design, despite the fact that the main purpose of FreeCAD is mechanical engineering and development of new product design.

[https://wiki.freecadweb.org/Release notes 0.19](https://wiki.freecadweb.org/Release_notes_0.19)

CELLULOID v0.21 VIDEO PLAYER RELEASED:

03/22/2021

The Celluloid 0.21 (formerly GNOME MPV) video player release is now available, providing a GTK-based GUI for the MPV console video player. Celluloid has been selected by the Linux Mint distribution developers to replace VLC and Xplayer starting with Linux Mint 19.3. Previously, a similar decision was made by the developers of Ubuntu MATE.

<https://github.com/celluloid-player/celluloid/releases/tag/v0.21>

PORTEUS KIOSK 5.2.0 RELEASED:

03/23/2021

Porteus Kiosk 5.2.0, based on Gentoo and designed to equip stand-alone Internet kiosks, demo stands and self-service terminals, is out. The distribution boot image is 130 MB (x86_64).

Porteus includes only the minimum set of components required to launch a web browser

(Firefox and Chrome are supported), which is limited in its capabilities to prevent unwanted activity in the system (for example, changing settings is not allowed, downloading / installing applications is blocked, only access to selected pages). Also, specialized Cloud versions are offered for comfortable work with web applications (Google Apps, Jolicloud, OwnCloud, Dropbox) and ThinClient for working as a thin client (Citrix, RDP, NX, VNC and SSH) and Server for kiosk network management.

<https://porteus-kiosk.org/news.html#210322>

NOKIA RE-LICENSED PLAN9 OS UNDER MIT LICENSE:

03/23/2021

Nokia, who in 2015 acquired Alcatel-Lucent, which owned research centre Bell Labs, announced the transfer of all Plan 9 intellectual property to the Plan 9 Foundation, which will oversee the further development of Plan 9. Simultaneously, the Plan9 code was published under the MIT permissive license in addition to the Lucent

Public License and GPLv2 under which the code was previously distributed.

The main idea behind Plan 9 is to blur the distinction between local and remote resources. The system is a distributed environment based on three basic principles: all resources can be viewed as a hierarchical set of files; there is no difference in access to local and external resources; each process has its own mutable namespace. The 9P protocol is used to create a single distributed hierarchy of resource files. The classic Plan9 codebase has continued to evolve from the 9front and 9legacy communities, which have produced prebuilt versions for use on modern hardware.

<https://www.bell-labs.com/institute/blog/plan-9-bell-labs-cyberspace/>

MANJARO LINUX 21.0

RELEASED:

03/24/2021

Manjaro Linux 21.0, built on Arch Linux and aimed at novice users, is out. Manjaro comes in live builds with the KDE (2.7 GB),

GNOME (2.6 GB) and Xfce (2.4 GB) graphical environments. Builds with Budgie, Cinnamon, Deepin, LXDE, LXQt, MATE and i3 are developed with community participation.

To manage repositories, Manjaro uses its own BoxIt toolkit, designed in the same way as Git. The repository is supported on a rolling basis, but new versions go through an additional stage of stabilization. In addition to its own repository, there is support for using the AUR (Arch User Repository) repository. The distribution is provided with a graphical installer and a graphical interface for configuring the system.

<https://forum.manjaro.org/t/manjaro-21-0-ornara-released/59399>

RELEASE OF THE GNOME 40:

03/24/2021

Compared to the previous release, more than 24 thousand changes were made, in which 822 developers took part. For a quick assessment of the capabilities of GNOME 40, specialized live builds

based on openSUSE and an installation image prepared as part of the GNOME OS initiative are available. GNOME 40 is also included in the beta builds of Fedora 34.

The project switched to a new version numbering scheme. Instead of 3.40, release 40.0 was published, which allowed getting rid of the first digit "3", which has lost its relevance during the current development process. Intermediate bug-fix releases will be shipped as 40.1, 40.2, 40.3 ... Major releases will continue to be published every 6 months, i.e. GNOME 41.0 will be released in fall 2021. Odd numbers are no longer associated with test releases, which are now labeled alpha, beta, and rc. They decided not to use version 4.x in order to avoid confusion and overlap with GTK 4.0.

<https://foundation.gnome.org/2021/03/24/gnome-40-release/>

THE

VIRTUALBOX NETWORKING PRIMER

Connecting and Configuring
Virtual Machines



Robin Catling

The VirtualBox Networking Primer

Connecting and Configuring Virtual Machines

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

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

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

Author: **Robin Catling**

Publisher: Proactivity Press

ISBN13 : 9781916119482

Amazon US link:

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

Amazon UK link:

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

Kobo:

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



COMMAND & CONQUER

Written by Erik

LMMS Pt.2

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.

Do you want to make music with free software? Of course you do! Are you musically challenged, like me, or maybe tone deaf? Let's see if we can make something simple that won't break the bank. Once you hear what you have done, it may boost your confidence. The idea here is to have fun, and learn as a by-product. I will try to keep it under ten instruments, to show you how easy it can be! (Why should you

follow a tutorial by someone who knows nothing about music???? Well, all I will say is that the proof of the pudding is in the eating...

The eighties was a great time for electronic music artists. Simple, repetitive tunes, big hair, and you had it made. (Okay, the re-launch of our base tune was in 1981).

Let's look at a simple tune and see if we can simplify it even more. This is what we are after: <https://www.dailymotion.com/video/x115e>. (However, we want our own remix!). The original song had more of an industrial, gritty perception (to me), but I got that the writer of the song thought that all models were robotic. How about we go

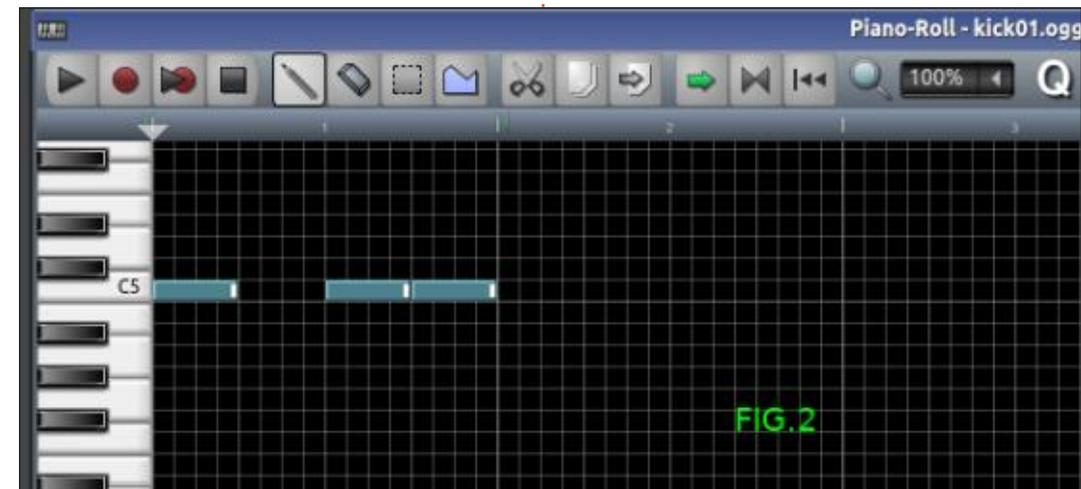
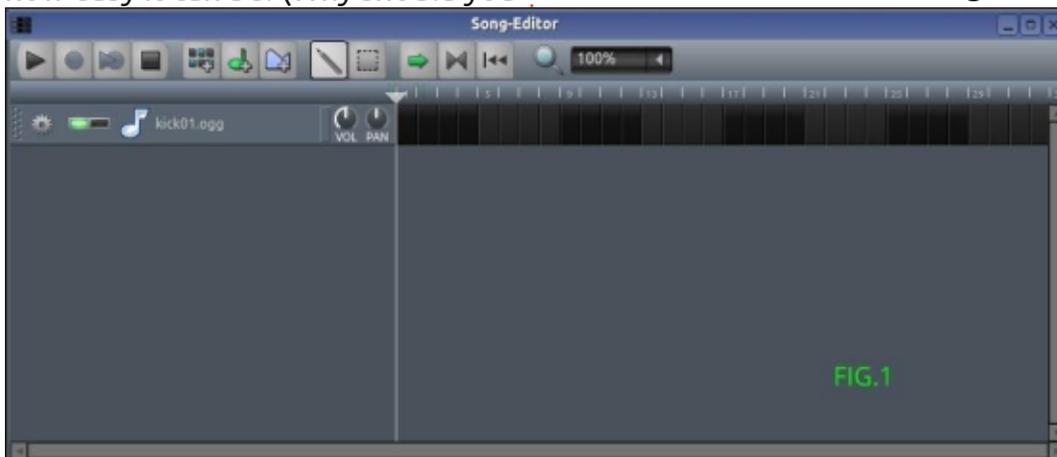
industrial on it? Should we work some cowbells into it?

I chose this tune because of its simplicity. Maybe it is monotonous, but I want you to be able to make a well known tune by the end of this article. Don't knock it. It is meant for n00bs, not muso's. We will be using only the built-in instruments, so, no need to download anything. This is important for you to re-create what I have done.

Fire up LMMS and let's begin!

The original song is about 124 beats per minute. I "calculated" this by using an app called 'bpm tap' on my phone. Since we are making an

industrial remix, we do not want it that slow. Set your tempo to 140 BPM please. Remove all the instruments given and close the beats and bass-line editor. (Most tutorials on YouTube start you with the beats&bassline). Yes, close it. We will not be using it. Right-click the little gears and click "remove this track", until the song editor is blank. As with many other songs, let us begin with the bass. Open your instruments and find 'kick01' and drag it into your song editor (fig.1). Double-click on the first black bar next to the "pan" button, to bring up the piano roll. You do not need to know anything about music, but it helps. I am going to assume you are all bright, and not



having to explain why there are piano keys down the left, or why it is called a piano roll. If you would like a tour of the interface, write to us at misc@fullcirclemagazine.org, and I will accommodate you.

Find C5. Paint a note. It will be quite harsh, if your sound is loud. If you listened to the video above, you would hear about 3 notes. Dum dum-dum. Over and over. Paint them in as you hear them (fig.2 - previous page). Now press the play button. The timing is all wrong? Not to worry, we can fix that! We need to shorten the notes, by clicking on the end of each (you will see <->), and dragging them shorter. What seems to sound right, is when they are two (2) of the smaller blocks long. However, the beat is off. See if you can figure out, by ear, where

the beats should be (see fig.3 for mine). Now, instead of painting the notes over and over, let's simply cypasta! Shift+s puts you into "select mode". Highlight your notes and they should turn blue. Ctrl+c & ctrl+v, and the notes went back to cyan. What happened? Well you pasted your notes over the other ones. Ctrl+d puts you back into "draw mode", and you can now use ctrl+shift to click and drag your selection to the next bar. *Tip: your selected notes need to be dark blue before you drag, or it will drag individual notes. Repeat this for four (4) bars and that's it!

Troubleshooting: do any of the drumbeats *not sound like the others? Check if you don't have multiple notes overlaid on each other. Save your progress often.



Drum... check (fig.4)

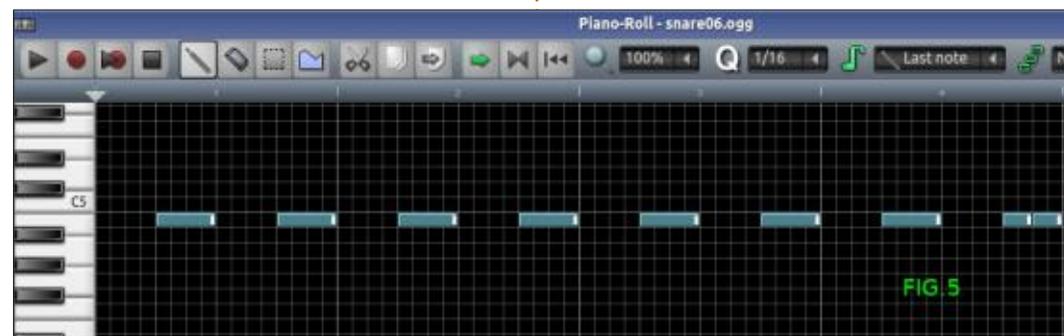
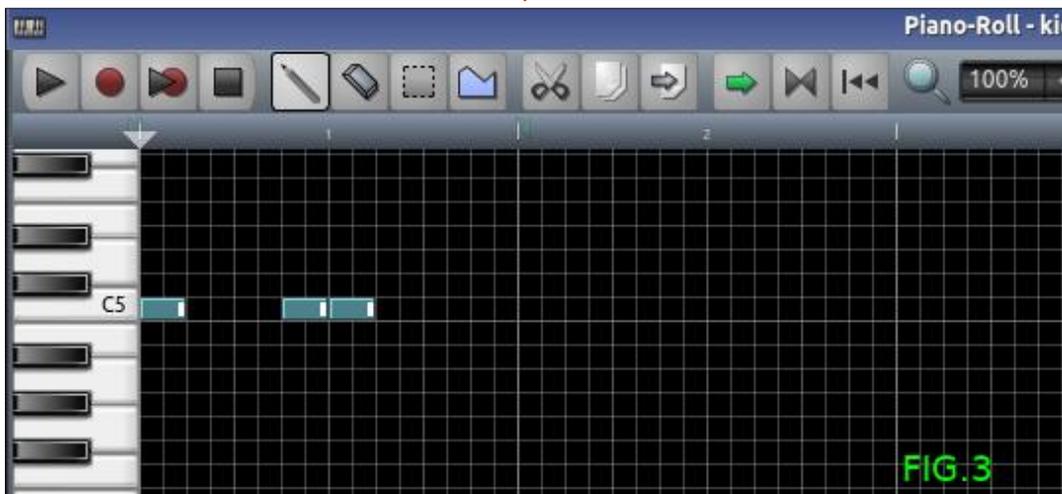
What is a drum without a snare? Grab 'snare06' from your instruments, drag it to your song editor, and open the piano roll as above. If you listen to the video, you can make out a steady tish-tish on the offbeat. Let's make that! Find C5 again and paint the snare in twice per block. However if you listen long enough, there is a double tap to break the monotony. See if you can figure out where. Follow the instructions in the first part if you get lost. Also having beats all on C5 grates my ears, so I will drop the snares to the white

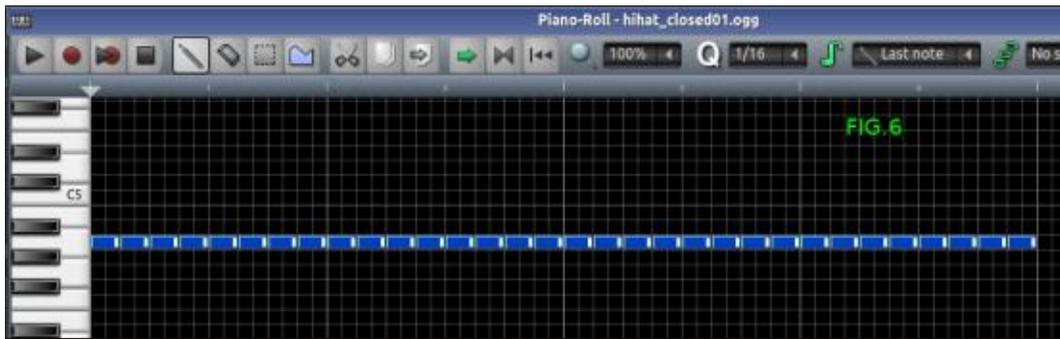
note below. You can move it up or down the scale to suit your liking (fig.5).

Snare... Check (fig.5),

Press the play button in your song editor. What you hear is a beat that fits with Zombie nation or Das modell. (Yes I know it is very harsh, but we will deal with that later).

Let's move on to the high-hat you hear. It is a simple rhythm of tap-tap-tap-tap. Easy enough, you say. Grab the first closed high-hat and get to the piano roll. I am not going to repeat everything; detailed instructions are in the first





part. I will take the high-hat down to the next white key, and fill four beats. Did you get yours the same as mine? If not, listen again (fig.6).

High hat... Check (fig.6).

I now have three entries in my song editor (fig.7). You will notice

that the turquoise blocks span only a few seconds when you hit the play button, though they repeat. Now obviously I don't want to paint in every note. The idea of music software is to speed up the creation, and music does repeat a lot. Now, if you listen to the song, you realise that is why it is so



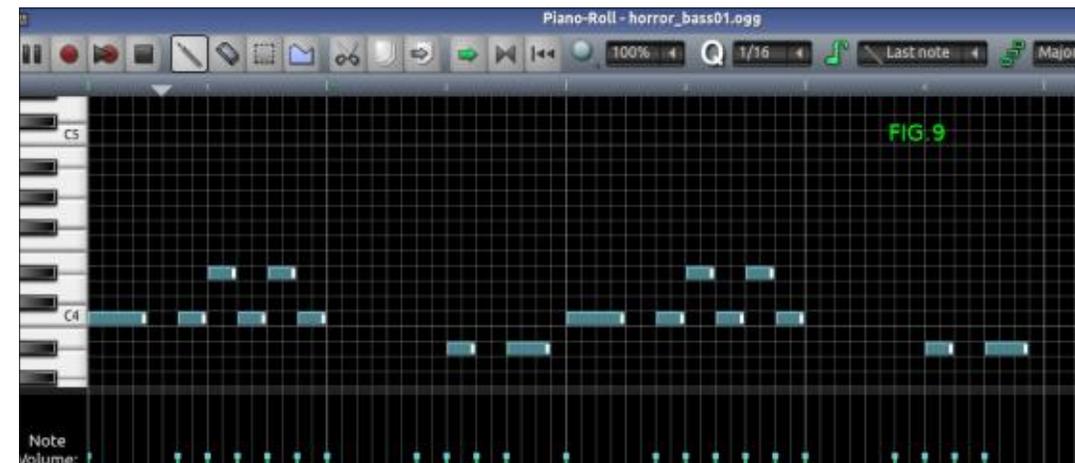
monotonous. The beat never changes.

In the SONG EDITOR, this time, hold down the ctrl key and left-click & drag each of the turquoise blocks right four times. Don't worry if they do not line up, you can simply left-click & drag them into position (fig.8). Repeat this action four more times and you have the base of your (their) song. When you hit play now, you will hear typical windscreen wipers, as I call it. Left and right swishing of the music, if you will. If you don't hear it, move your head from side to side with the beat. XD

Now for that iconic sounding tune. Drag the 'horrorbass01' from your instruments into the song editor and open its piano roll. We are aiming for 'gritty', remember? Crunchy bass, low tones, and

scraping sounds. This time, head down to C4 and start painting notes. I am not quite sure where the melody belongs as I am tone deaf, but C4 sounds about right on my laptop speakers. (If you are serious about making music, this is where a decent sound card and speakers come in). Okay, let's dissect that tune. Baam bam-bam-bam-bam-bam. A long note followed by five shorter ones that see-saw. Then it drops down with a baam bam-bam-bam baam. See if you can work out the tune. If you did, congratulations!! If you did not, copy mine for now (fig.9). If you listen to the song from beginning to end, you may notice that the melody itself is also just repeated over and over. Hit play on your song editor. It's rough, but it's there!

Basic melody... Check (fig.9).

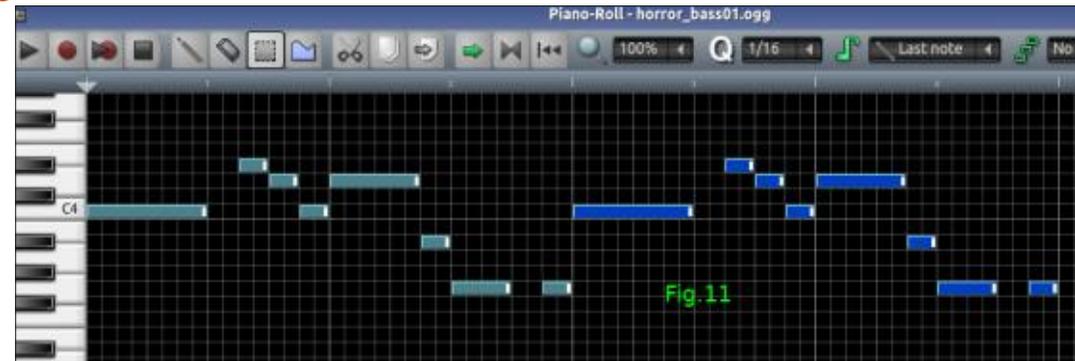
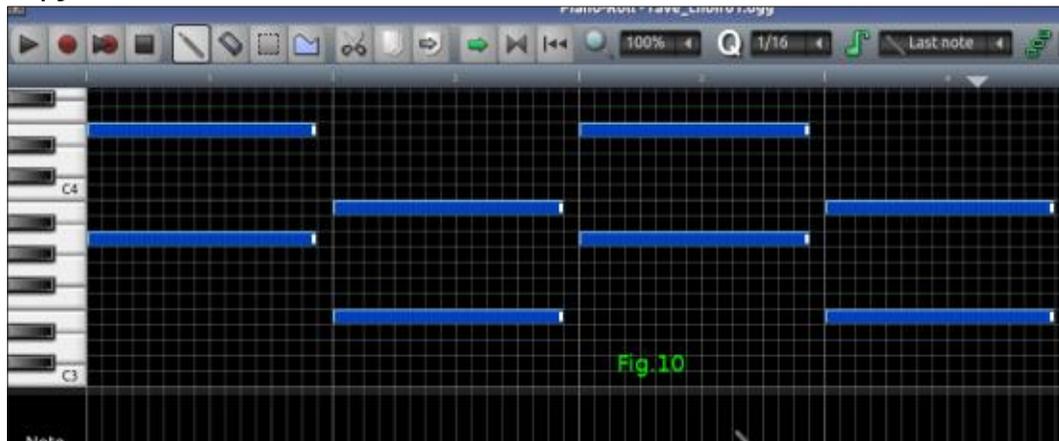


Now we need to start rounding out our tune. I think this is called core or chord progression, don't quote me! Basically, it's harmony to our tune. This is almost like it carries the melody. Don't get hung up on terminology, do! Before we start, I will warn you that this is the hardest part if you do not have a midi keyboard. (Not that I know how to play a midi keyboard, I am fluent at playing only the fool). Open your instruments, drag 'rave_choir01' into the song editor, and open its piano roll. We can either use very long notes or very short ones. Lots of short notes impart energy to a tune and long notes just compliment your energetic tune. Head on over to C3 on the piano roll. This time, we need to 'sort-of' follow the main tune. If you look at (fig.10), you can copy what I did. I think these notes

are supposed to be three at a time, but two works for me. This compliment to your melody is going to play as long as your melody is playing (at least). So don't make it too harsh! 'Bell_choir02' might also work here, but you generally want a soft instrument. The reason I chose "rave choir01" is that at low pitch it sounds like something being dragged, which fits our theme. In your song editor, ctrl & drag it out to match the other permanent repeats. For now, just turn this instrument's volume down to 25%. (It must still sound gritty, but not take over the song). We will make it pretty later. (Or not).

Harmony... Check (fig.10).

Drag 'bassslap02' into the mix. Keep it there, we will get to it now; first we need to finish the main melody before we add to it. What

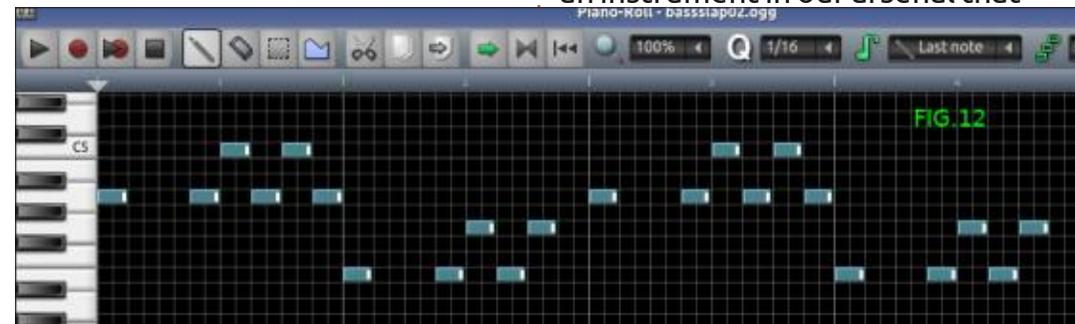


we are going to do with our basslap is, shadow the main melody. The first part of the main melody repeats twice, then it changes. So hold down control and copy the turquoise block to the right. The next part of the tune is longer than the rest, but it does not matter. Baaaam bam-bam-bam baaaam bam baam. Then, there seems to be one more note before it jumps back. Let me try to recreate it in the piano roll. Copy mine if you did not get it or are too lazy (fig.11). This repeats four (4) times. Then, at about fifty (50) seconds into the tune, there is another keyboard or sample being played. Now that we have the fist

half of the tune down, let's get this shadow going. The shadow has to harmonise with the main tune and the foundation. I have shamelessly stolen it from elsewhere as I could not work it out (fig.12). This is OK. Stealing with your eyes is allowed, my mother used to say. My teachers did not appreciate it during exams though... ;)

Shadow... Check (fig.12).

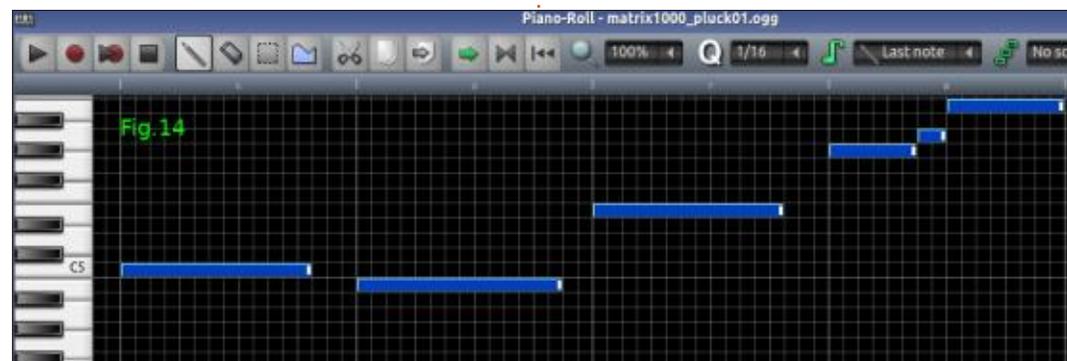
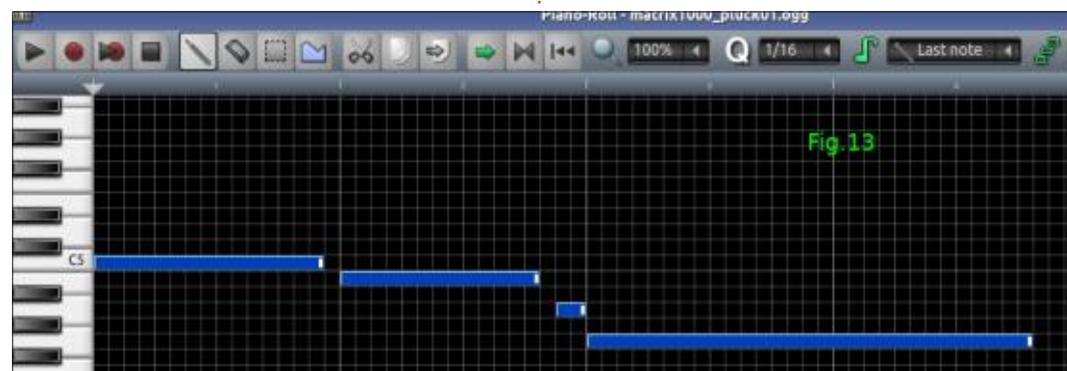
Now let's look at the alternate piece at 50s into the video. Since you basically know how the instruments work, we will go slightly next level. We do not have an instrument in our arsenal that



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sounds right. We will use "Matrix1000_pluck01" for this. Now, as you may be aware, a pluck is not going to cut it, as these are long notes. Try to recreate the tune, hum that part to yourself, and see if you can paint your own notes. (This is YOUR remix! Nothing is set in stone!). This screenshot is going to be in two parts, as it is too long for my WXGA screen (fig.13 & fig.14). When you play this, it sounds AWFUL! Click on the word "Matrix1000_pluck.ogg" in the song editor, and another window will pop up (fig.13). Click on the letters "FX" and "add effect". Another

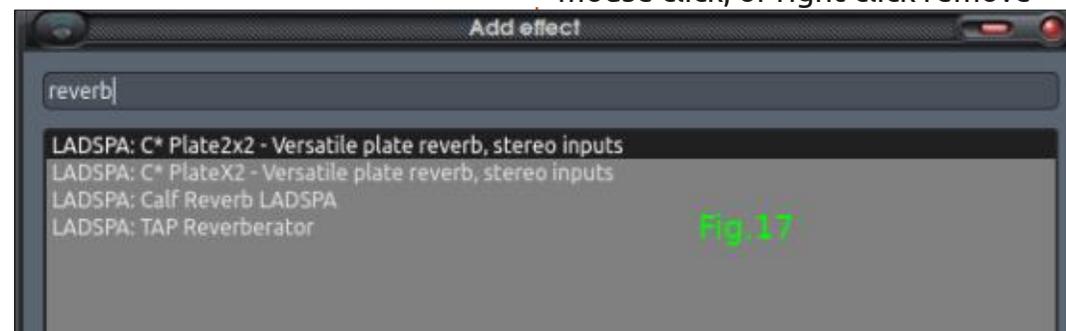
window will pop up (fig.17). Type "reverb" without the quotes and select "C*plate 2x2...". You need to adjust the "bandwidth" and "tail" to maximum, and bring the dampening down to about fifteen (15) and get blend to maximum. You can close those windows and press play in your piano roll. Sound a lot fuller now? Also more dramatic, whilst still feeling gritty. However, it needs a bit more, as these are loooooong notes, so if you look at (fig.16), you will see the word "controls". W/D or 'wet & dry' needs to go to zero (0) and "Decay" to maximum. I put this track's



volume at 60% for now. We will be applying 'reverb' to some of the other tracks, just before we get into automation!



For fun and some artistic licence, drag the snaph01 to the song editor. Copy/paste the snare pattern into the snap. Now you can middle mouse click, or right-click remove



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on the snare where the new pattern starts. Paste the snap in as a replacement. You should now have a gap in the snare – like a kid missing its front teeth. If you are unsure, see (fig.18). Now you are also going to take a ‘bite’ out of your main melody, of course. You want the ‘new part’ to stand out, like in the original.

For your homework, I want you to finish copy-pasting what you have to make the first part of the song, right up until the next little ‘solo’. Don’t worry, it is only like 8 bars. You currently have everything to complete this task in 5 minutes. Train your dragon, erm... I mean your ears, by listening to the original in the video, then painting

the notes in LMMS. See if you can beat me to make the little ‘solo’ or ‘riff’ or whatever it is called (not a musician, remember?) that pops up at about 1:50 in the video. Just be aware that, although it seems to repeat, there are some notes at the end of the second piece that are slightly different to break the monotony of the song. (I will give you a hint: it’s something common nowadays, with three notes down, two up, then one down again). Play it through, once done, and be proud of yourself. Feel free to play around and edit instruments, or add your own. Slice and dice the tune. The only one that you need to impress is yourself. Just keep a copy of what we did so you can continue in the next issue when we do the second

part of the song, and I will show you a few more easy tricks.

See you in the next issue when we finish up our ‘industrial remix!’



Fig.18



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.



First things first. Last month, I gave you a quick overview of the RTK.GPIO board, so I thought I'd give you a quick update. I tried some "normal" GPIO type tests, and they worked well. However, when I tried an I2C program to a simple I2C device, it failed to run. I'll try to keep playing and let you know.

Now, on to the Raspberry Pi Pico board. Yes it did come in. The darn thing is so tiny, and I'm so old with bad eyesight, that it was hard for me to solder the pins for the breadboard. I did it, without any shorts (or melting the board), but it took me twice as long as it would have 4 years ago. It worked pretty well, I must say. There are lots of possibilities for the RP2040 chipset and I can see many powerful microcontroller boards coming out in the future based on it. As they say in Texas, "They done did GOOD!" (I don't say that, but 'they' do).

This month, we'll revisit free weather APIs on the Internet. Why? Well many of them have either closed down or gone to a full pay

model, so the choices have changed. When I'm sitting in my living room, I want to be able to check the weather outside and get the forecast for my location. Since I live in an apartment, a proper freestanding weather station is just not possible, so I have to rely on an outside source.

I did a quick check the other day and found one that has a plan that I can get behind. It's called Weather API, and you can visit their homepage at <https://www.weatherapi.com/>. They offer 5 plans, one of which is free. Their free plan offers the ability to make 1,000,000 calls per month which works out to over 2,000 calls per day. Plenty to get a reasonable source of information.

They offer return data in either XML or JSON format. We'll explore both formats, and some of the data that is returned.

Before you can get anything, you need to sign up for a free API key. Point your favorite browser to <https://www.weatherapi.com/>

signup.aspx, and you will be connected to the Sign-up page. It's very simple. Just type your email address twice, create a password and enter it twice, and click the "I'm not a robot" box, then agree to the Terms and Conditions. Finally, click the "Sign Up" button. You'll get an email asking you to verify your email, and you'll receive a key. Be sure to save this key somewhere, because you'll need it as part of any queries to the system.

As we have done before, this API has you build the http query with the query type, the location you want, and your API key. Here is what the simplest format (with my API key obscured) looks like...

```
http://api.weatherapi.com/v1/current.json?key=xxxxxxxxxxxxxxxxxxxx&q=78748
```

Here's the breakdown of the URL:

Base URL Address: `http://api.weatherapi.com/v1/`

Type of query: `current.json`

Your API Key: `?key=xxxxxxxxxxxxxxxxxxxx`

Location: `&q=78748`

Additional Parm's (if any)

The URL can easily be constructed from variables and an "f-string"...

Base = `'http://api.weatherapi.com/v1/'`

Query = `'current.json'`

Key = `'?key=xxxxxxxxxxxxxxxxxxxx'`

Location = `'&q=78748'`

link = `f"{Base}{Query}{Key}{Location}"`

The location can be "US Zipcode, UK Postcode, Canada Postalcode, IP address, Latitude/Longitude (decimal degree), or city name." Of course, the IP address needs to be your EXTERNAL IP address, not your local internal IP address.

You can paste the URL into the

HOWTO - PYTHON

browser of your choice, and the result looks something like the code shown right.

You can ask for the data to be returned in JSON format (as we did here), or XML format.

Here is the link to the API docs: <https://www.weatherapi.com/docs/>. There are many options here. As I was writing this article, they added two new options, Weather Alerts and Air Quality.

Before we get into code, let's take a quick look at the forecast call.

```
http://api.weatherapi.com/v1/forecast.json?key=xxxxxxxxxxxxxxxxxxxx&q=78748&days=3&aqi=yes&alerts=yes
```

For the free API account, you

can have a forecast for up to 3 days. The number of days depends on the level of account you have signed up for.

So the big changes from our previous current-weather query is the "forecast.json" instead of "current.json" string, and the addition of days, aqi=yes (aqi stands for Air Quality Index), and the alerts=yes. There is also a language option that you can use, but you should look at the documentation to get the correct parameter.

When we send this query to the API, you'll get back a LARGE amount of data. I'll just paste a portion here (below).

You get the location information and current condition information,

```
{
  "location": {
    "name": "Austin",
    "region": "Texas",
    ...
  },
  "current": {
    "last_updated_epoch": 1614170717,
    "last_updated": "2021-02-24 06:45",
    "temp_c": 18.9,
    "temp_f": 66.0,
    ...
    "gust_kph": 35.6,
```

```
{
  "location": {
    "name": "Austin",
    "region": "Texas",
    "country": "USA",
    "lat": 30.17,
    "lon": -97.82,
    "tz_id": "America/Chicago",
    "localtime_epoch": 1614079451,
    "localtime": "2021-02-23 5:24"
  },
  "current": {
    "last_updated_epoch": 1614078905,
    "last_updated": "2021-02-23 05:15",
    "temp_c": 3.9,
    "temp_f": 39.0,
    "is_day": 0,
    "condition": {
      "text": "Clear",
      "icon": "//cdn.weatherapi.com/weather/64x64/night/113.png",
      "code": 1000
    },
    "wind_mph": 0.0,
    "wind_kph": 0.0,
    "wind_degree": 0,
    "wind_dir": "N",
    "pressure_mb": 1020.0,
    "pressure_in": 30.6,
    "precip_mm": 0.0,
    "precip_in": 0.0,
    "humidity": 76,
    "cloud": 0,
    "feelslike_c": 1.3,
    "feelslike_f": 34.4,
    "vis_km": 16.0,
    "vis_miles": 9.0,
    "uv": 1.0,
    "gust_mph": 12.3,
    "gust_kph": 19.8
  }
}
```

just like when we did the current query. In addition to that, you also get the Air Quality information, since we asked for it (bottom left).

Next comes the forecast information. Under the general ['forecast'] header, you get a forecastday group of data for each of the days that you requested (3 in this case), each of which starts with "date" and "date_epoch", then goes on to giving a day overview followed by the astronomy data for that day (sunrise, sunset, etc), then 24 hours of data grouped by hour. Then it repeats for each extra day that you requested, then finally any alert data that might have been issued. Each of these data groups are pretty much the same as the current condition data.

It's a lot of data – which is why I used JSON format for the ease of picking out what I want on any call.

```
"air_quality": {
  "co": 250.3000030517578,
  "no2": 3.0,
  "o3": 67.19999694824219,
  "so2": 1.399999976158142,
  "pm2_5": 11.5,
  "pm10": 16.600000381469727,
  "us-epa-index": 1,
  "gb-defra-index": 1
},
```

THE CODE

Now we can concentrate on the code. Luckily, it is very similar to the logic that we've used before. As always, we start with our imports...

```
import requests
```

```
import json
```

We now define some of our variables.

When we run the program, our output will look something like that shown right.

That's it. Very simple and easily modifiable to add or delete elements as you wish – to customize the output to your needs.

I've placed the code on my github repository at <https://github.com/gregwa1953/FCM-167>.

```
Time: 2021-02-28 04:30
Conditions: Overcast
Temp: 72.0
Wind: 13.6 Gusts: 22.6 From: S (170°)
Feels like: 76.6
Pressure:
  1010.0mb
  30.3 in
```

3 Day Forecast

```
2021-02-28
Conditions: Patchy rain possible
Forecasted High: 76.3
Forecasted Low: 66.7
Chance of rain: 91%
Chance of snow: 0%
Phase of Moon: Waning Gibbous
Moon Illumination: 83
```

```
2021-03-01
Conditions: Patchy rain possible
Forecasted High: 52.5
Forecasted Low: 47.3
Chance of rain: 87%
Chance of snow: 0%
Phase of Moon: Last Quarter
Moon Illumination: 69
```

```
2021-03-02
Conditions: Partly cloudy
Forecasted High: 58.8
Forecasted Low: 43.3
Chance of rain: 0%
Chance of snow: 0%
Phase of Moon: Last Quarter
Moon Illumination: 62
```

```
No alerts at this time.
```

One final thing. Last month, I promised that I would give my first impressions of the **Raspberry Pi Pico** microcontroller. I had originally intended doing the update here, but even before I got the Pico board in, I was so excited that I talked to Ronnie about creating another series of articles under a separate title. He said that it would be no problem, so I will now be trying to do two articles a month, one on “standard Python” and one on working with Microcontrollers using MicroPython and CircuitPython. I’m sure that every once-in-a-while, there will be an occasional crossover project that will take up both.

Be sure to check out my new article series called “Micro This Micro That” in this and future issues of Full Circle!

As always, until next time; stay safe, healthy, positive and creative!



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



HOW-TO

Written by Erik

Latex - Pt.1

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

Prerequisites: A willingness to learn.

Target audience: N00bs

My uncle was a typesetter for a small town newspaper. Though it fascinated me, it did not seem very difficult or something I would ever want to do. It was weird to watch, all the backwards letters and infinite arranging. The only printing I ever did, was a small

parody newsletter on a dot matrix printer for a few of my friends. Though it was received well, ribbons were extremely expensive, and my little printer would eat ribbons, to the extent where I would buy ink at a 100th of the price of a ribbon and “fill” it by wetting and winding the ribbon through. You could only do that once or twice before the ribbon would wear out. So printing was never my forte and, as such, it never bothered me. Fast forward to the year 2014 and I had to support a client who used Latex (poor souls

thought Red Hat WAS linux!). Though even today, I still consider myself a beginner, I was dropped into the deep end and made lots of mistakes. I thought it may be good for others to learn from my mistakes.

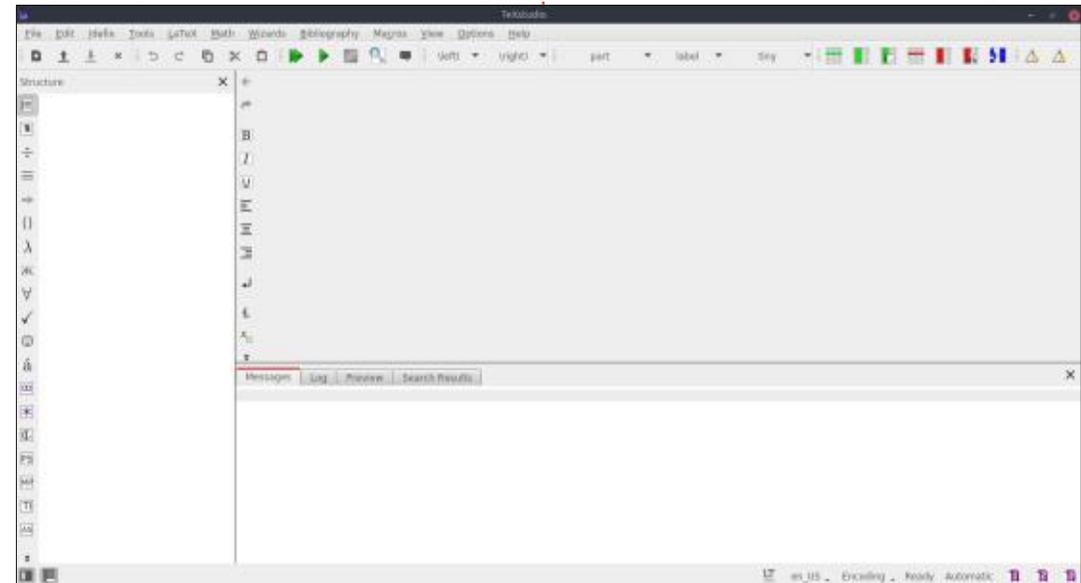
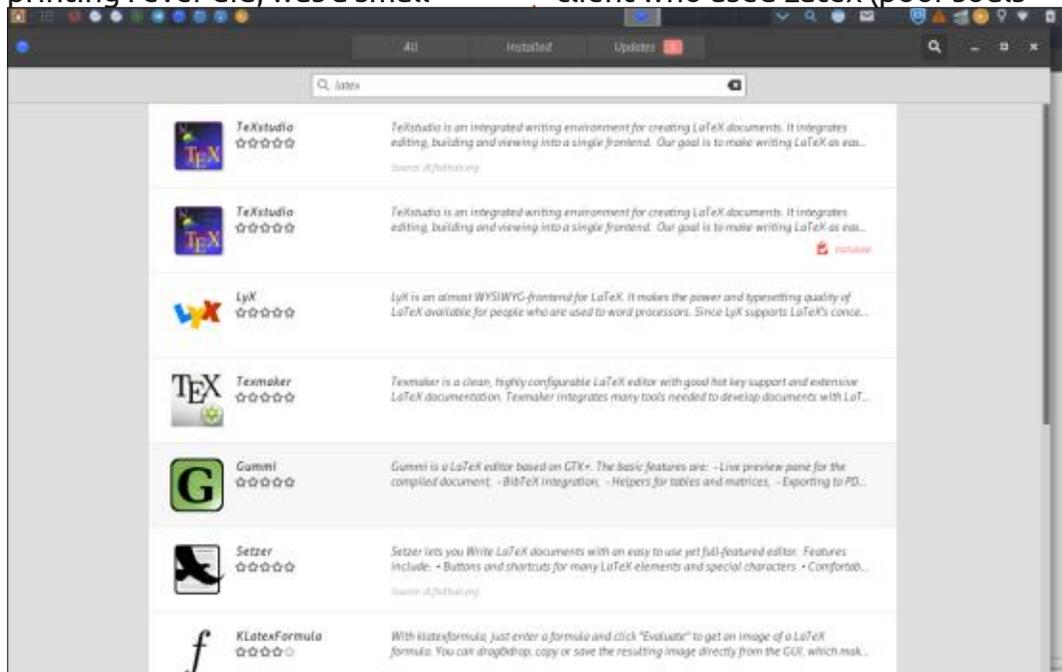
There are a lot of Latex applications in Linux, simply type latex in the search bar of your software centre.

I am going to use “TeXstudio”; it’s like an IDE for Latex, but the second name of Linux is choice, so use what makes you happy. I suggest you use it to follow along,

and once you get the hang of it, you can use your favourite latex application. The reason I am suggesting TeXstudio is because, like an IDE, it gives hints and “code completion”. This is an immense help.

Let’s get started. Open TeXstudio and you will be presented with a blank interface. Don’t worry, I will take you through it.

Like many programming IDEs, TeXstudio is laid out in 3 big panes. If you have used an IDE before, you will know that it is sort of like your



HOWTO - LATEX

file browser, with an output window at the bottom. However, you need to know certain "commands", and I don't know how to ease you into it, other than letting you do it. Monkey see, monkey do...

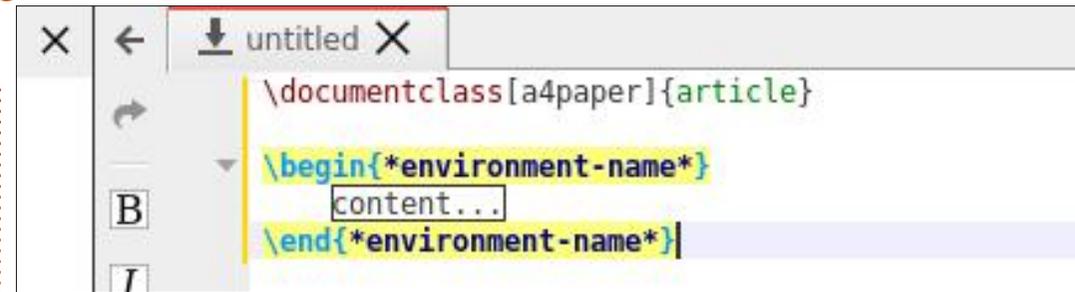
The catch with TeXstudio is that you can't type where you need to, until you press CTRL+N or click the "New" button.

Open a new empty document with the above method. I was thinking of making a lost pet poster (something simple), but I realise most people will want to do some text work first. Also, the closest I have to a pet at the moment, is the roof rat in my ceiling that is eating me out of house and home.

Apparently, he likes the rat poison I put out, as he eats it all in one go. If it makes him sick, he probably has better medical aid than me too, as he is always back for more. *Le Sigh...

In the empty document, type `\d` and peruse the drop-down menu, to get an idea of how busy it can get. Feel free to type other letters after the "`\`" to peruse the drop-downs, and see why I thought this was an application for Sadists. Select: `documentclass {keyvals} {class}`.

Now for some substitution, replace the word "keyvals" with "a4paper", and the word "class" with "article". This is a magazine and we are going to make an



```
\documentclass[a4paper]{article}
\begin{environment-name*}
  content...
\end{environment-name*}
```

article. You do this by double-clicking the word you want to replace, and it should highlight, then just type the word you need.

Go to a new line. This part is important. Almost every Latex document needs this. Type `\begin` and hit enter. The IDE will fill in the `\end` for you (see above).

Just like before, we are going to substitute the "`*environment-name*`" with our own. In our case, it will just be "document". Within our document boundaries, we will nest our article (see below).

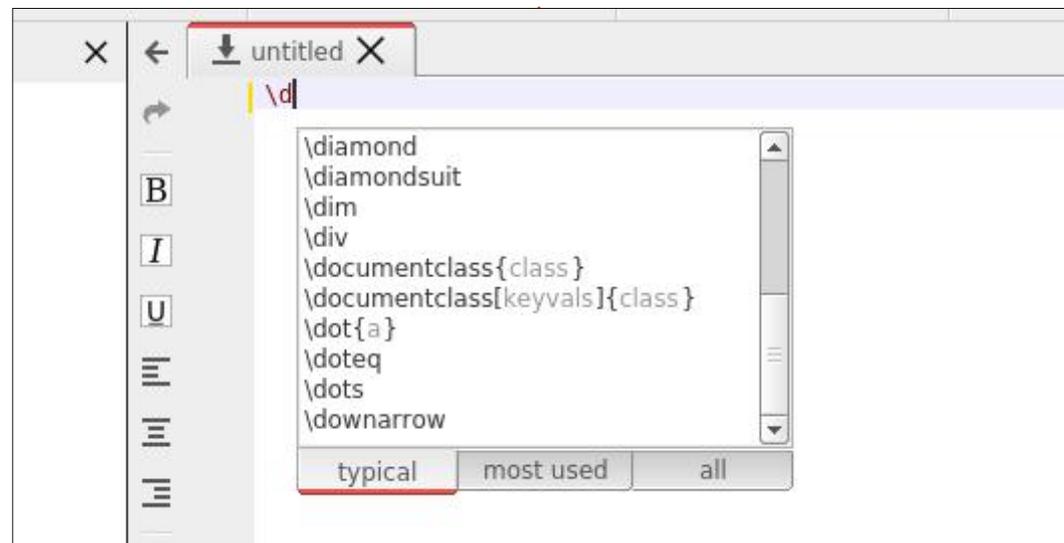
The keys you need to get familiar with are F6 and F7. F6 will

compile your document, F7 will display it in preview mode. F5 is the key you use if you have a wide monitor, as it includes F6 & F7.

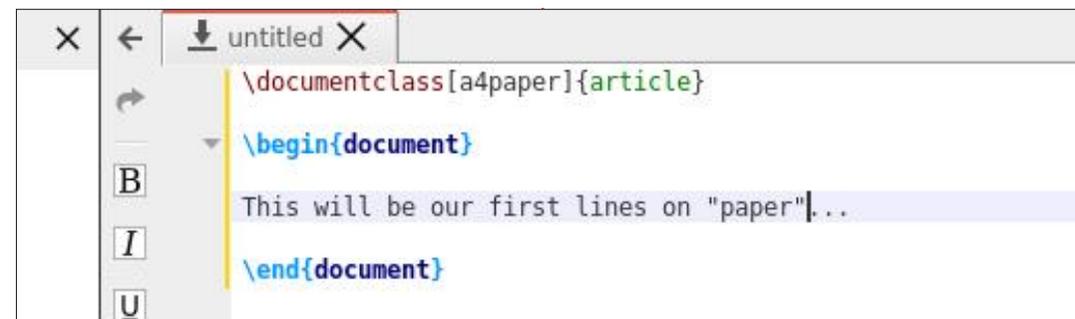
TeXstudio does not save your document automatically when you compile it. Save often.

Okay, now to "redpill" you. Your official "need-to-know" is here: <http://tug.ctan.org/info/symbols/comprehensive/symbols-a4.pdf>

However, I find it ugly, with all the blocks, so here is a clean version: <http://math.mit.edu/~dspivak/files/symbols-all.pdf>



```
\diamond
\diamondsuit
\dim
\div
\documentclass{class}
\documentclass[keyvals]{class}
\dot{a}
\doteq
\dots
\downarrow
```



```
\documentclass[a4paper]{article}
\begin{document}
  This will be our first lines on "paper"....
\end{document}
```

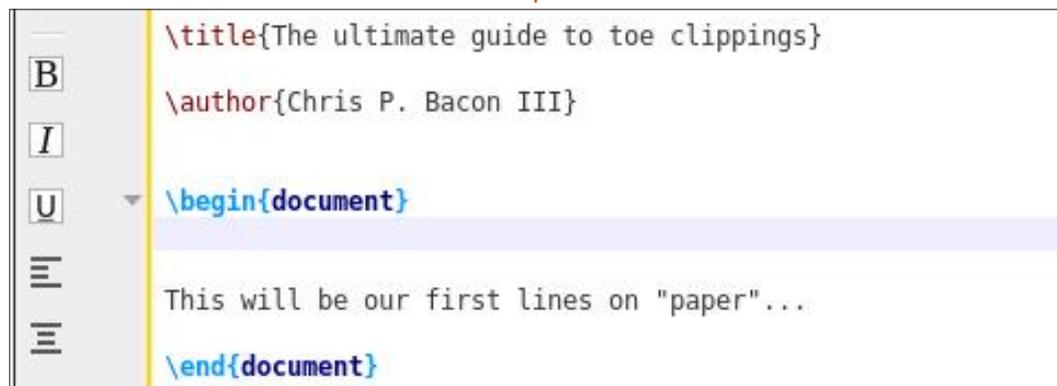
Download it and keep it for reference.

Now a quick word on what we did.

A documentclass refers to a "class", or recipe, or blueprint. Let's imagine that to be bread. We can have white bread, we can have whole wheat bread, we can have rye bread. But - all of them are bread. They are all the same, but different, ie. they share characteristics. At the moment, I don't want us to be caught up in jargon, but it may look strange to someone who has never used an IDE before.

People have written books in Latex, so it is not for documents only. Let us look at adding your particulars to a document.

Add the following lines to your



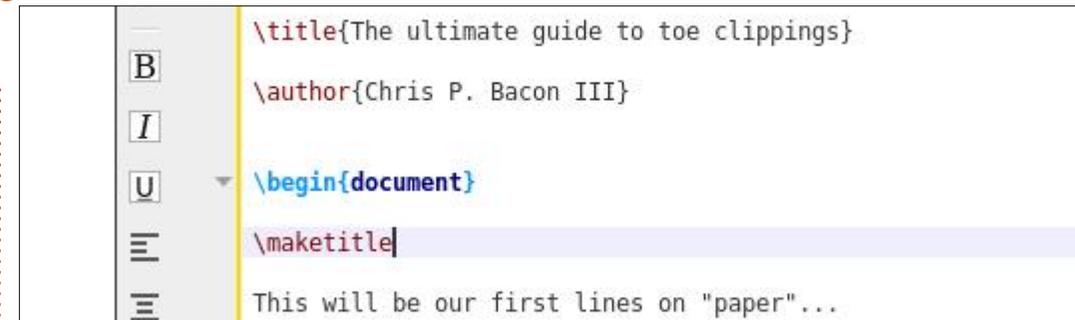
```
\title{The ultimate guide to toe clippings}
\author{Chris P. Bacon III}
\begin{document}
This will be our first lines on "paper"...
\end{document}
```

document, compile it and preview it:

What happened? Nothing? Are you sure?

Because we added our title and author outside our main body, it was recorded, but not printed. Be aware of the beginning and end. (Luckily for us, Latex has a built-in command to take care of the little things, but more on that after this). The best way I can describe using latex is that it is like cooking a meal. If you set out all your ingredients first, then do the measurements beforehand, the experience of using it will be much smoother. Let me demonstrate, add the following to your document, and compile and run it:

`\maketitle` will now make a title in a large font, add your author and today's date. Handy, no?



```
\title{The ultimate guide to toe clippings}
\author{Chris P. Bacon III}
\begin{document}
\maketitle
This will be our first lines on "paper"...
```

A quick word on layout, The reason we type it all out, one line after another, is for readability and for finding errors. The IDE will put red marks next to the line containing the error in the margin. That said, the following is just as valid:

Lots of educational institutions have guides on using Latex. Why we are doing this, is because sometimes it is easier when there are pictures and sometimes we just need someone to whip out the crayons. A document by a professor, for a professor, is like eating dry dog biscuits for a beginner.

Did we make a mistake? Do you know a better way? Why not let us



```
\documentclass[a4paper,11pt]{article}\begin{document}\title{Example 2}\author{Barry Trotter}\date{January 1, 1901}\maketitle\section{Why are hipsters important?}This is our second document. It is for example purposes only.\end{document}
```

know at:

misc@fullcirclemagazine.org

We would love to hear from you.

REFERENCES:

<https://www.dailykos.com/stories/2015/1/15/1357854/-Self-publishing-101-Using-LaTeX-to-create-a-beautiful-book>

<https://www.oreilly.com/library/view/latex-beginners-guide/9781847199867/ch03s02.html>

<http://www.docs.is.ed.ac.uk/skills/documents/3722/3722-2014.pdf>



HOW-TO

Written by Erik

Website: <https://fritzing.org/home/>

Price: 8.99 Euro (Donation)

Blurb: "Fritzing is an open-source hardware initiative that makes electronics accessible as a creative material for anyone. We offer a software tool, a community website and services in the spirit of Processing and Arduino, fostering a creative ecosystem that allows users to document their prototypes, share them with others, teach electronics in a classroom, and lay out and manufacture professional pcbs."

Many of you may have been following Greg's awesome tutorials and may have seen him mention Fritzing in issue 104, but gotten stuck at the paywall. I know I did. (\$9 may be small change in first world countries, but here that is the equivalent of \$150.) You may have gone to github and tried to build it, and ended up with a blank screen, etcetera. Well, come along for the ride. I will attempt to fill you in and get you up to speed to follow Greg in his awesome tutorials.

INSTALLATION

On Ubuntu, the install is as simple as:

```
sudo apt install fritzing
fritzing-data fritzing-parts
```

Now you just launch it from your menu.

GETTING STARTED

The welcome screen is your starting point for help. Actually, more and thorough help is available

from the "help" menu. You navigate the window via the top tabs. Please click on "Breadboard" to bring up a breadboard, the components on the right should cover all your project, but if you need one that is not there, you can create it. Neat hey? The next three tabs will be empty if you have not started creating anything yet.

To get to where Greg was in issue 104, all you need to do is find the raspberry pi in the core parts list, then drag it on to your screen with your breadboard. Right-click, and rotate. (The search function

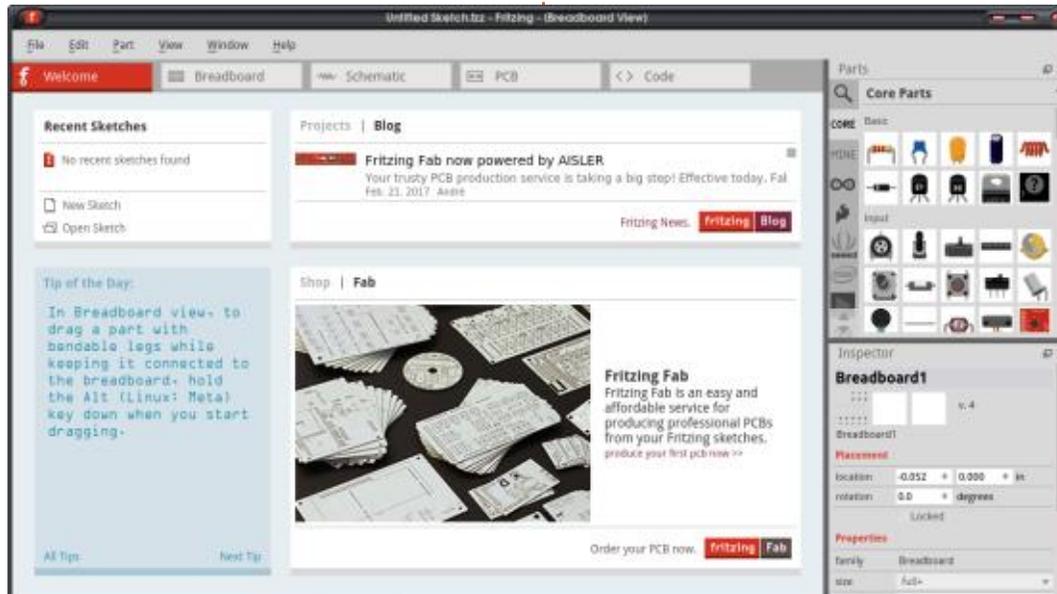
does not find "raspberry" or "pi", so just scroll down to it.)

PARTS

Mostly, you will find everything you need, but you may need some new part. Check the Fritzing forums and you can download parts in the .fzpz format. You can then import that part into the program. Convenient, right?

TAKING IT A BIT FURTHER

When you place an item on your breadboard, you can go to your fourth tab, PCB, to move the part. You have two layers to play with. For instance, place a resistor anywhere on your breadboard and go to PCB. Now on your right-hand side, under inspector, you can choose which side of the PCB you would like that resistor on. You can also choose if it should go through the board or be a surface-mount. Most parts have options in the inspector, even the simple breadboard. You can name parts and that name will appear on your



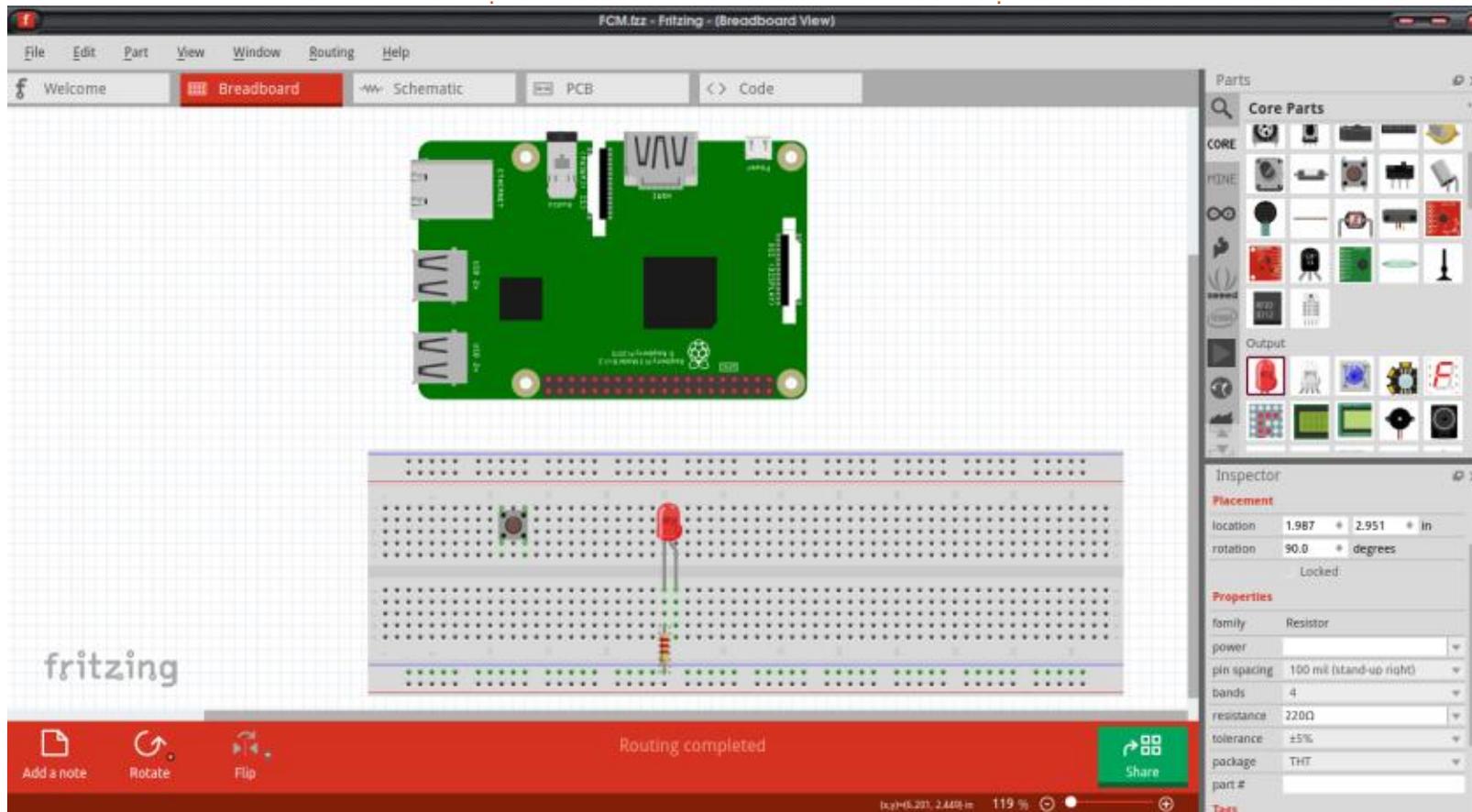
HOWTO - FRITZING

PCB layout. Naming your parts will help you identify them quicker as having a bunch of resistors of differing values makes it easier to spot the one you are looking for.

TIP: You can rotate parts with your mouse wheel for faster operation.

I am back on track with Greg's tutorials, what is your excuse?

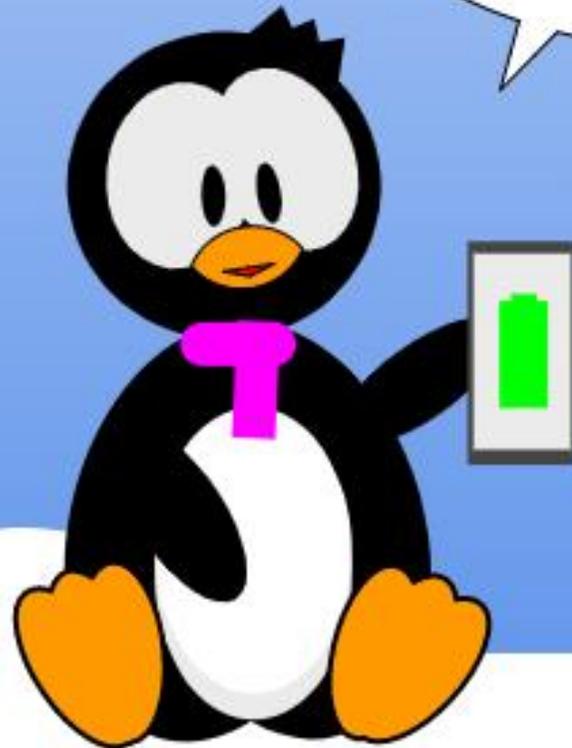
If you would like some Fritzing fun in future issues, why not drop us an email on misc@fullcirclemagazine.org ?



 **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.

THE DAILY WADDLE

NOTHING MORE ZEN,
THAN A FULL BATTERY...





HOW-TO

Written by Mark Crutch

Inkscape - Part 107

As promised last time, I'm going to continue describing the flowed text improvements in Inkscape v1.0. Previously, I showed you how to turn off the new SVG 2.0 flowed text implementation, in order to produce files that are compatible with Inkscape 0.92, but, unless you've got a specific reason for doing that, I strongly recommend sticking with the SVG 2.0 variety for compatibility with web browsers and future Inkscape releases. This time I'll dig into the gory details of the new features, both from an Inkscape user's perspective, and also with regard to the way flowed text appears in your SVG file.

First, some definitions: flowed text is the sort that will automatically wrap its lines to fill the available area. Usually that area is defined as a rectangle (though Inkscape can also flow text into arbitrary shapes), and the text will be rendered so that each line fills the width of the rectangle as fully as it can. Changing the dimensions of the rectangle causes the text to move around – to “flow” – in order

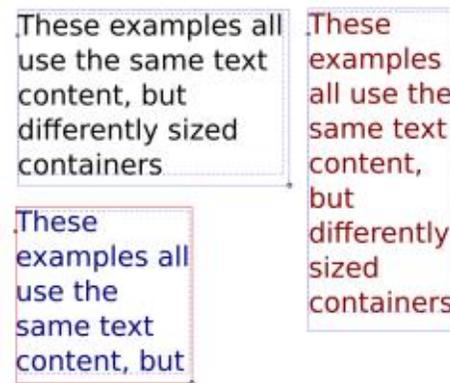
to best fill the width. Ordinary (non-flowed) text refers to text objects that aren't constrained inside a rectangle or other shape, and don't flow to fill the space. Line breaks are explicitly entered, and have to be manually adjusted if you want the layout of the text to change. Whereas flowed text gives layout control to Inkscape, ordinary text keeps that control solely with the creator.

In earlier versions of the program, it was possible to create flowed text by dragging a rectangle with the Text tool selected, then typing your content into it. Ordinary text was created by just clicking on the canvas with the Text tool in order to position the text entry caret, and then typing. Those were your only two options: flowed or ordinary. With Inkscape v1.0, however, there are now two different varieties of flowed text to understand.

As with previous releases, you can click-drag to create a rectangular text box on the canvas when the Text tool is selected.

Typing into this box will produce flowed text which, in practice, behaves the same way that flowed text did in earlier Inkscape releases, but with greater compatibility outside the program.

The image below shows a single piece of flowed text that was duplicated twice (and the text color changed). You can see that each container has a small diamond-shaped handle at the bottom-right corner: dragging this resizes the container and re-flows the text, as seen in the black and red text versions. The one with the blue text was achieved in the same way, but the handle was deliberately dragged such that the container size was too small for the text it needs to contain. You can see that

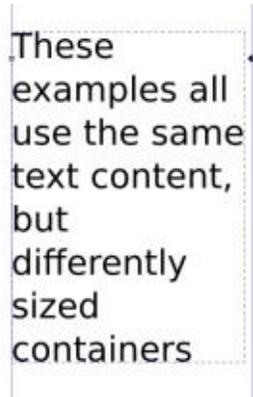


Inkscape draws the container in red in this situation, as a visual indicator that the text has overflowed outside of the allowable space.

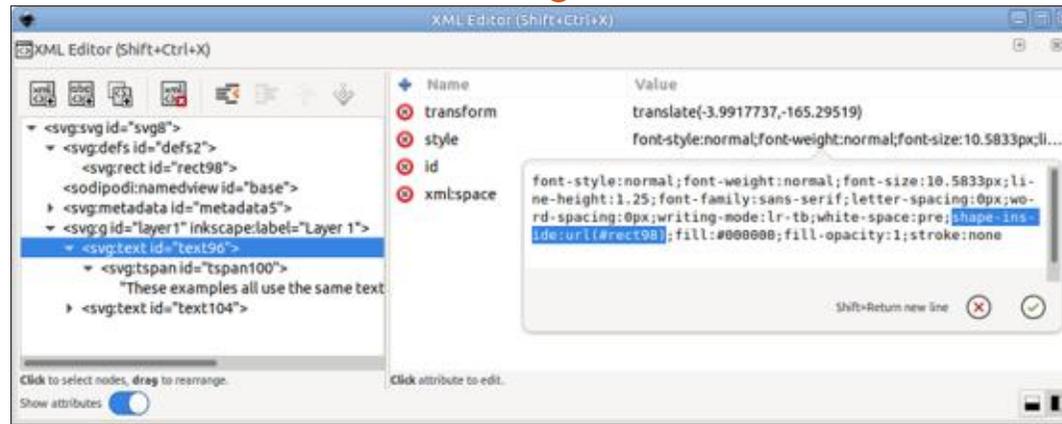
In this example, it's pretty obvious that the text has overflowed the last container, but that's not always the case. When dealing with large amounts of text in a bigger container, you may not notice that the border turns red when you add a word into the middle of the prose. The second flowed text type, referred to as “Column mode”, goes some way to addressing this possibility.

Column mode begins life as ordinary, non-flowed text. Just click on the canvas with the Text tool, and begin typing (or paste in some already written content). But, instead of beginning the tedious task of manually entering line breaks, look at the right-hand edge of the text box, where you'll find a small diamond-shaped handle. Start dragging that handle and you'll see a pair of vertical blue guides appear (representing the left and right edges of the “column”), and your

text will be flowed to fit between them.



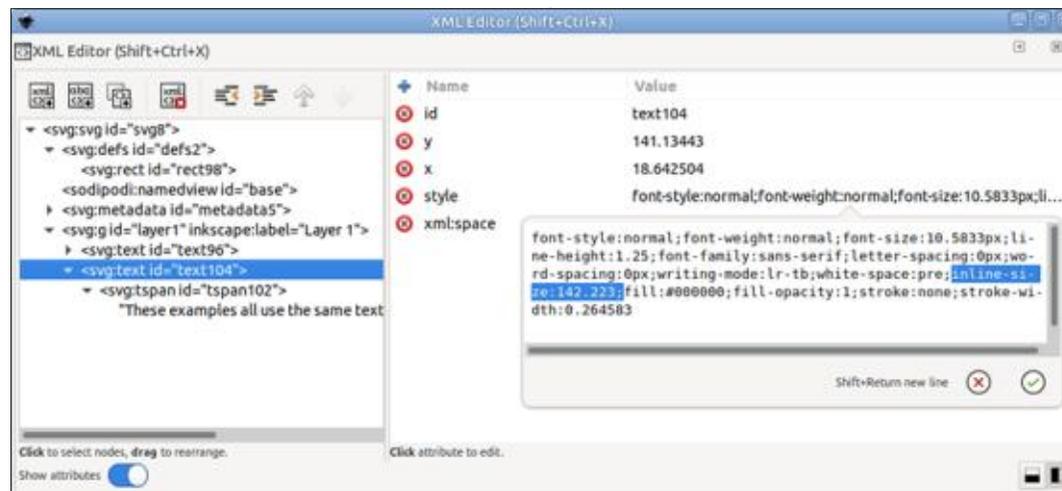
What's important about this mode is that it sets the width of the flowed text, but doesn't constrain the height. This has the advantage that you'll never accidentally clip the end of your text with the flow container, but it also means that your text can flow to be taller than you intend, possibly leading to it interfering with other parts of your design. Where this type of flowed text comes into its own, therefore, is in loose designs where you want to tweak the column width dynamically to see what works best for your particular layout (think posters and leaflets), rather than designs which already have well defined areas of a specific height in which the text has to fit (such as magazines or newsletters).



TECHNICAL DETAILS

With two different ways to create flowed text, let's take a look at the technical details behind these new features. Feel free to skip this section if you just want to use them as an artist, and aren't interested in what happens in the XML code.

The first thing to know about



you create your content.

The click-drag type of flowed text consists of two parts: the text itself, and the rectangle that constrains it. The latter is created as a hidden object in the <defs> section of the XML, and is then referenced via the "shape-inside" CSS property, within the style attribute of the svg <text> element. In the image below, you can see the highlighted text on the right which references "rect98", the ID of the rectangle near the top of the left-hand pane.

As you can also see on the left, the <text> element just contains a single <tspan> as a child, which contains the entire text string.

Column mode is fairly similar, but there's no need to reference a hidden rectangle. Instead of the "shape-inside" CSS property, Inkscape inserts an "inline-size" property which defines the width of the column. Once again the text itself lives as a single line within a solitary <tspan> child element.

Unfortunately, both of these approaches are broken in web browsers today. Whilst the "inline-size" method is well supported in

HOWTO - INKSCAPE

modern browsers, in my testing it appears to have an effect only on HTML content, and does not work for SVG files. The “shape-inside” CSS property, on the other hand, is not currently supported by any browsers. It is part of the CSS Shapes specification, but was dropped from Level 1 of the spec (the one the browsers have implemented), and moved to Level 2 (the one they haven’t, yet).

On the surface, therefore, it might seem that flowed text hasn’t really advanced much. We’ve gone from a non-standard, unsupported technique to a pair of nearly-standard, but still unsupported techniques. Yet, if you save a file with flowed text from Inkscape 1.0.x and load it into a browser, the text is visible – line breaks and all. So what’s going on?

You can see the reason for this apparent support if you examine the file via the browser’s developer tools, or if you load the same file back into Inkscape and look at the XML editor. At first all seems to be as expected: the `<text>` elements are present, with their corresponding “shape-inside” or “inline-size” properties, but when drilling further down to the text

itself, we’re faced with a structure like this.



The single `<tspan>` element, containing the entire text, has been replaced with a separate `<tspan>` for each line in the resultant output – the same sort of structure you would expect to see if you had manually entered the line breaks. These elements are used for positioning each line, but then a second level of `<tspans>` is used to style the text. We’ve gone from a

single child, one-level deep, to a collection of two-level children. This is the SVG 1.1 fallback content that allows the current batch of browsers to display the content as it appears in Inkscape.

This change of structure has repercussions. Because it produces the expected visible result in a browser, it will probably serve the needs of 99% of users. But it also changes the nature of the text. What was previously a single string is now broken into separate blocks: this could potentially have an effect on screen readers and search engines, depending on how they treat `<tspan>` elements. It would definitely have an effect on JavaScript programmers who want to dynamically find or change the text on the page, or had hoped to use code to alter the column width or rectangle size with the content flowing automatically to suit.

This does raise some questions about how these files will fare in the future. If browsers do start supporting “inline-size” on SVG text, or add support for CSS Shapes Level 2, how will they behave when faced with text that already has line-breaks? It’s possible that this could result in additional automatic

line breaks being inserted which conflict with those that Inkscape has already provided, breaking the intended layout.

But these concerns are purely hypothetical at this point, whereas the problems with flowed text in v0.92 are very real. The changes in version 1.0 are a definite improvement, and make it an obvious choice if you wish to use flowed text in your designs. The details above really matter to only a minority of web developers, so shouldn’t prevent you making the switch.

If you really don’t want the SVG 1.1 fallback text included in your file, it can be turned off in the Preferences dialog (Input/Output > SVG Export pane). Note, however, that this will affect only newly created flowed text – any previously saved file that already contains multiple `<tspan>` elements will still maintain that structure.

OTHER CHANGES

There are a couple of other changes to mention regarding flowed text, though they’re relatively minor points.

One feature of 0.92 was the ability to convert flowed text into ordinary text via the Text > Convert to Text. This would “apply” the line-breaks by converting the content to a SVG 1.1 compatible <text> element with multiple <tspan> children. This no longer works in version 1.0, and has no effect on the structure of the XML. Saving the file will insert an SVG 1.1 compatible version of the text however (as discussed in the previous section), but it also inserts some CSS which will cause Inkscape to still treat such content as flowed.

Essentially if you actually want to convert from flowed text to fixed line breaks in a way that Inkscape will recognise, you have little choice but to manually insert the breaks, or to remove the new CSS from a saved file. As far as I can tell, this now makes the Convert to Text menu option completely redundant, as any attempt to use it simply puts a “No flowed text(s)” message in the status bar, and has no effect on the text or SVG structure.

Rather than fix the line breaks, what if you want to un-flow your words, to revert them to a single

line of ordinary SVG text? In this case, the program is oddly contradictory as to the method you use. Version 0.92 offered the Text > Unflow menu option, which still works for click-drag style flowed text in version 1.0. It’s always had a nasty habit of moving the un-flowed text quite a distance from the original flowed version for some reason, so if you do use this, and your text seems to disappear entirely, try zooming out and panning around.

For reasons best known to the Inkscape developers, this approach doesn’t work for text that has been flowed via column mode. To revert this to a single line, you need to Ctrl-click on the diamond handle used for adjusting the column width. To further add to the confusion, this same technique does not work with the diamond handle at the bottom right of the rectangle used for click-drag style flowed text. Come on devs, how about a little consistency!?

The final change to mention is a small but important usability improvement. If you use the Text > Flow Into Frame option to flow text into multiple shapes on your canvas, the order in which the

shapes are filled is now based on the order in which you select them. Previously it used the selection order in reverse, which is less than intuitive, so it’s good to see this change make its way into the program. It makes the behaviour more familiar to anyone who has ever used a desktop publishing program, such as Scribus – though I still maintain that Inkscape is a poor substitute for a real DTP application for anything but the most basic of page layouts.

Next time, we’ll conclude this part of the series by looking at the support that has been added for new font types in Inkscape v1.0.



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



MY NEW SMART TV
IS REALLY SMART



HAL9000 EDITION



I struggle to find the correct words or phrases for this article. I will start with the simplest answer. My father raised me to look for the best alternative to get a task gone. My father came from a large agrarian family, and I know this shaped his role as my father.

I used Linux as an alternative operating system. My old Windows Vista laptop became infected, and was not working. I used Linux to recover the missing files. In time, I found a replacement Windows laptop, and reinstalled the missing files. My wife and I then saved our money to purchase a MacBook Pro. We fell under the impression that Apple was completely better than Windows.

We were left with an older Windows laptop that was not being utilized. Following a close friend, Mike, I installed Ubuntu onto that laptop. And slowly I became evangelized against Windows. We maintained the MacBook and I began my distro hopping. Always looking at downstream Debian projects. I ran on Ubuntu for 3-5

months, then I drifted over to Linux Mint. I stayed on Linux Mint for a year. In this timeframe, I began looking into Linux magazines, podcasts, and websites. I developed my knowledge. I learned about RPM based Linux, and developed deeper into my Linux Love. And my interest in ChromeOS devices started. Incidentally I started to read Full Circle Magazine.

I moved into using openSUSE. I was perplexed by YAST and zypper commands. Yet I was willing to learn. After 3-6 months, openSUSE announced Leap and Tumbleweed as being the main products from SUSE. I was put off by the recent announcement, and I drifted towards Fedora.

It was at this time I asked Ronnie to write an article to cover Chromebooks. He did not have a Chromebook, but offered me a chance to write an article. Using my work bonus, I purchased a Toshiba Chromebook 2, and I wrote my first article.

Fedora felt better, but I was

never able to call it home. Using Distrowatch, I came across KororaOS. I installed Korora and felt at home. Eventually, I reached out to the project team and became their social media manager. And, in time, like all small teams, Korora was discontinued. I drifted back to Fedora.

I started looking at Arch-based distros and BSD operating systems. Slowly our Macbook became obsolete. I replaced macOS with an Arch-based Linux and continue to write for Full Circle.

In time, like all children, I lost my father. And I spent the last few months recomposing myself for my family. And I make the parallels between my life's decision to my upbringing. My father gave me two pieces of advice that I strongly reflect upon:

"Sometimes the only choice you have left is to be strong."

"Choose the best alternative for you."

-PA Webb

I now realize I use Linux due to its inherent strengths and the alternative role it assumes. And now I strongly understand my father will be with me as long as I write about Linux in all forms.



SJ Webb is a researcher coordinator. When he is not working, he enjoys time with his wife and kids. He thanks Mike Ferarri for his mentorship.



Last month, we set up a repository for an emulator, XROAR, for the old Radio Shack Color Computer. In order for XROAR to run properly, we needed to have virtualized copies of the ROM chips that ran the CoCo, as the Color Computer was affectionately nicknamed. Although we were able to find copies of the ROMs for download easily enough, there was no documentation as to where to put the ROMs on the local drive so that XROAR knew where to find and load them.

BASICS OF HOW TO LOAD SOFTWARE ON THE CoCo

As a quick recap from last month, the CoCo had its operating software, a version of Microsoft Basic, on a pair of chips inside the computer, a ROM (Read Only Memory) chip for Color Basic, and another ROM chip for Extended Color Basic, which mostly added graphics and sound commands. The machine did not have a DOS, or Disk Operating System, by default, as disk systems at that time were a

VERY expensive add-on.

Software on the CoCo came on solid state cartridges, on cassette tapes, or on floppy diskettes. The cartridges were plastic boxes containing a printed circuit board and a ROM chip, or chips, that plugged into a slot in the computer (in the CoCo's case, on the right side), and basically turned the CoCo temporarily into a single-purpose dedicated computing function machine. There was no capacity (originally) for any kind of windowing or multi-tasking. That would, however, change later, as we'll see shortly.

Other software was loaded from cassette tapes, via a cable running from a cassette deck to the computer, or from floppy diskettes. The floppy drive controller was in cartridge form and also had a ROM chipset that stored a very basic DOS for the



CoCo – to manage and catalog the contents of your floppy diskettes. Once a program, BASIC or machine language, was loaded and invoked, the computer was effectively a single-tasking, single purpose computing machine, until the advent of OS-9 and DeskMate, about which more later.

FINDING THE FIRMWARE (OR ROMs)

In order to get XROAR to work correctly, we're going to have to find and install all three of the BASIC ROMs: Color Basic, Extended Color Basic, and Disk Basic. Without the ROMs, XROAR, or even a hardware CoCo, does not know how to do anything at all.

There is a caveat here; the legality of using virtualized copies of the ROMs in an emulator may be questionable, so we can't advocate or recommend it.

In my personal case, I still own a Color Computer 2, so it's conceivable that I thereby have a legitimate license to use the ROMs for it, even in digitized format in an emulator.

Consequently, I did a Google search and readily found the three needed ROMs, even finding them in versions specifically labeled for use in XROAR. I downloaded them and saved them to my Downloads directory under Home. They were in ZIP format, so I unzipped them after downloading was complete, as detailed last month. The unzipped firmware ROM format is *.rom. However, after spending a significant amount of time searching for and reading documentation on XROAR, I could find nothing indicating where to put the ROMs so that XROAR could find and load them. Quel dommage! (That's specifically for the amusement of Full Circle's French version translator, Elizabeth/Auntie E.)

WHERE TO PUT THE

FIRMWARE FILES

Well, here's where it's handy to know how things usually work in Linux, and to apply those general principles in the hope that they'll hold true for a specific program (although there's certainly no guarantee of that, so let's keep our virtual fingers crossed).

Many Linux applications will create a folder in the Home directory with the application name, preceded by a '.' character. The '.' in front of a folder or file's name indicates it is to be hidden, something that is often done with configuration files to keep users from accidentally deleting or

modifying them or their contents. In order to see these files and folders, we need to change the default behavior of the Ubuntu File Manager, by going to the 'hamburger menu' in the upper right then click the checkbox for 'Show Hidden Files' to get Linux to show all the hidden files. Now, we'll need to create an XROAR folder. We're going to take a stab in the dark here that XROAR uses a hidden folder called '.xroar' in the Home folder, so click Home on the left side, then right-click a blank area in the right hand pane and select 'New Folder'. Name the new folder '.xroar' (minus the single quote marks), and hit <Enter>. Now, go back to wherever you saved the

Zip files with the ROMs and double-click each in turn. Navigate to the '.xroar' folder under Home and unzip the three ROM files into that folder.

RUNNING XROAR

Now, let's return to the program launcher at the bottom-left of the screen, and navigate back to XROAR, almost certainly on the last page. Left-click to launch, and voila! Now you'll get this screen, the normal screen you would see on a Radio Shack Color Computer. 32X16 black text on a green screen with a big ol' black border around it all. Now, THAT'S retro!



that most Color Computer software has lapsed into the public domain, notwithstanding that even back in the day, it would be hard for a company like Spectral Associates to prosecute someone for making unauthorized copies of Lunar Rover Patrol or Cubix when they were almost certainly not legitimately copyrighted, since Spectral did not have the license for the original Moon Patrol or Q*Bert. I still bought them, rather than pirating them, to support the companies, but they were probably never truly copyrightable and I doubt most CoCo software companies even maintained a pretense of copyright (especially since most of them are long out of business by now). Consequently, CoCo software can easily be found for download. Archive.org has a good selection, just for starters: https://archive.org/details/softwarelibrary_coco2. There's even more at: https://ia801604.us.archive.org/view_archive.php?archive=/3/items/Tandy_TRS80_Color_Computer_TO_SEC_2012_04_23/Tandy_TRS80_Color_Computer_2012_04_23.zip

FINDING CoCo SOFTWARE

It is a reasonable assumption

A few games that I specifically recommend:

- Dungeons of Daggorath: Early



first person (wireframe) role playing game (RPG).

- Dragonfire: Uses nifty programming tricks to display more than 4 colors in 4 color graphics mode.
- MegaBug: Very early software synthesized voice: "We GOTCHA!"
- Tetris: Obviously a true classic.
- Downland: Interesting and challenging precursor to Super Mario Brothers.
- Doodle Bug: Clone of underrated arcade classic Ladybug.
- Super Pitfall: Sequel to the Atari 2600 smash hit.
- Polaris: Excellent clone of Missile Command. Using the keyboard as fire buttons for three separate weapons depots raises this above almost any other home version.
- Donkey King: Really impressive version of Donkey Kong, with all FOUR screens (unlike the Colecovision version, that only had three).
- SR-71: For anyone who ever wanted to fly the famous super-speedy Blackbird.

Not on archive.org, but highly recommended:

- Lunar Rover Patrol: Excellent clone of arcade Moon Patrol.
- Sailor Man: Startlingly good version of arcade Popeye.

- Lancer: Very challenging CoCo version of Williams Electronics game Joust.
- Galagon: Close copy of videogame great Galaga.
- Pooyan: Lesser known whimsical arcade game, very good translation and a rare actual licensed version.
- Zaxxon: Another rare licensed arcade game, by CoCo uberprogrammer Steve Bjork. Best home version of this game I ever saw, in my opinion vastly superior to the vaunted Colecovision version.
- Guardian: Defender copycat that uses seldom employed graphics mode from the Video Display Generator (VDG) chip, called 'semigraphics mode', providing a much broader color palette than most games. Very fast-paced shoot 'em up.

FINDING CoCo MANUALS, INSTRUCTIONS, MAGAZINES, AND BOOKS

Many of these are also downloadable from archive.org. There were, as mentioned last month, a LOT of CoCo magazines (and books), and many have been scanned and posted to archive.org. A Google search will show many other locations online with scanned

versions of CoCo print material.

BAREBONES BASICS ON HOW TO LOAD AND RUN CoCo SOFTWARE

Software for the CoCo is going to come in two types: BASIC programs and machine language. Most commercial programs were in machine language format, which is much faster, but there are still a lot of useful and/or entertaining programs in BASIC. Most machine language programs will have an extension of BIN, most BASIC programs have an extension of BAS. A few will use other extensions, which will often force you to guess if the program is BASIC or machine language and to use the proper associated load command. Fortunately, there are generally only the two possibilities, so it's pretty easy to figure out.

BAS and BIN programs on XROAR are usually going to be loaded from a disk image, with the extension in Linux of DSK. Go to File – Run in XROAR and find the desired disk image (which may very well have multiple programs on it). The load process emulates a hardware disk closely enough to

actually show some lag as though it's reading the diskette. After loading the disk, use the command 'DIR (0)' to see the contents of Drive 0 (the first drive). If you see a BIN file, you can load it with the command:

LOADM"PROGRAM NAME

(The CoCo does not require typing in the .bin extension, or even closing the quotes).

Important side note: There are several keys on the CoCo keyboard that are mapped differently than our English keyboards, one relevant here is that the CoCo's double-quote key is SHIFT-2. Here's an example where we're loading the excellent Joust clone Lancer:



Hit <Enter> and the CoCo will load the requested program. Type EXEC, then hit <Enter> to run the program.

For BASIC programs with the extension BAS, the sequence is almost identical, but load with the command:

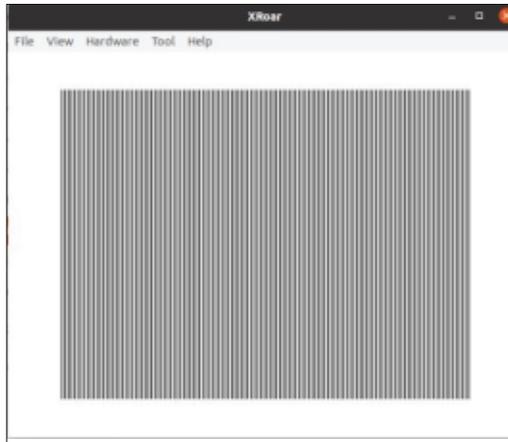
LOAD"program name

again, no need for .bas extension or trailing quotes. Hit <Enter> to load the program. To look at the program, type LIST, then hit <Enter>. To run the program, type RUN, followed by an <Enter>.

If you're working with cassette images, the process is almost identical, but the load commands are cloadm or cload. Exec and Run are still used just as in the case of disk software.

Most CoCo machine language programs, and a lot of BASIC ones as well, used a special 'artifact' color mode. However, XROAR defaults to a black-and-white vertically striped screen instead. To get the 4-color mode used in most arcade style games on the CoCo, with the colors black/white/red/blue, one had to actually program

in a 256x192 resolution 2-color mode. The video output actually overpowered the display on a normal TV (or composite color monitor), producing the blue and red artifact colors, while effectively lowering the real resolution to a still very acceptable (by the standards of the time) 128x192. However, XROAR will default to a mode that does not use the color artifact technology:

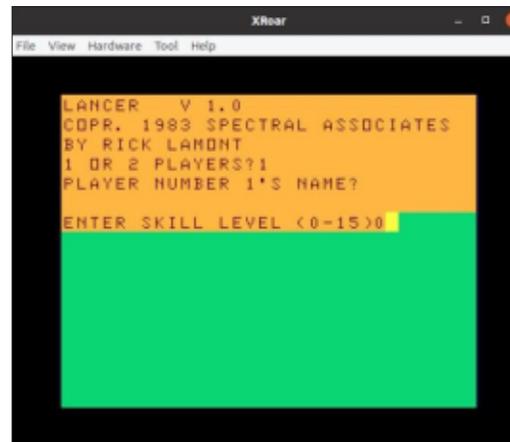


Many games of the time opened with a blue or red static screen, which was usually intended to be red. If it came up blue, the user would hit the machine's RESET button repeatedly until the screen changed to red. After that, you would usually hit <Enter> to proceed into the program. In XROAR, you can go to the View menu, click Composite Phase, then

select Red-Blue. If this comes up wrong, try Blue-Red. Alternatively, the shortcut Ctrl-A will cycle through available video modes without a complete reset. Here's the initial screen for Lancer once you choose the Red-Blue Composite Phase:



Once you hit <Enter> here, you'll get this sign-in screen:



Once you've signed in, you can play with a joystick, or go to the Hardware menu, select Right Joystick, then Keyboard. Use the arrow keys to control direction, the left Alt key to flap your ostrich's wings. You can also go Full Screen using F11. Happy Jousting! Or Lancing, as the case may be:



OS-9: A KIND OF PROTO-LINUX/PROTO-UNIX

To bring things back around to Linux, in a way, the Color Computer got a more sophisticated operating system later in its lifespan. It was a multi-user, multi-tasking OS called OS-9, which is a command-line oriented operating system that is VERY similar to pre-GUI versions of Linux, prior to the advent of GNOME, Unity, or KDE. If you are familiar with the Linux command-

line, the jump to OS-9 would be a very easy one. OS-9 Level One will run on XROAR, and there was some nice software available for it.



real-time clocking/dating, but the CoCo did not have any such capability.



Here's the main DeskMate screen:



As you can see, there was a Calendar program, a basic flat-file database (Index Cards), a simple spreadsheet (Ledge), a Paint program, a Telecommunications application, and a Text Editor. Back in 1986, this was some really heady

stuff!

Well, I hope you enjoyed that little walk down memory lane with me, and that we learned some more Linux lessons in the process. I encourage you to play around with the emulator and read a few of the archived books and magazines. It's interesting to see, and to reflect on, how much computing as an activity has changed over the years. As different as computing was back then, it was its own kind of fun!

DESKMATE

DeskMate for OS-9 was an applications suite, including a basic word processor, minimalist spreadsheet, terminal/communications program, and virtualized disks on it. It was very like a rudimentary version of something similar to today's basic computer Operating Systems. When starting into OS-9, or any OS-9 program, you had to put in the date and time, as the CoCo's 6809E did not have a real-time clock. In fact, the 'E' stands for 'external clock', denoting that the 6809E relied on having access to external



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.



March 2021 - Welcome to the first of the "Micro This Micro That" series of articles. Hopefully I will be able to keep up with doing two articles each month.

So what is Micro This Micro That? The goal is to provide readers with information and projects to demonstrate MicroPython and CircuitPython compatible microcontroller boards and sensors. Occasionally, I might throw in a Raspberry Pi board to show the differences between Python, MicroPython and CircuitPython. These articles will have code, schematics, diagrams and more – trying to provide real world programming techniques for microcontrollers. I'll attempt to point out the similarities and differences between CircuitPython, MicroPython, and "Full grown" Python. Believe me, there are TONNES of differences. I might even try to include an Arduino project here and there, but my main thrust will be on MicroPython and CircuitPython.

Before we get into any of the projects, let's take a look at exactly what a microcontroller actually is. From the AllAboutCircuits website, we get a very clear explanation of this...

"Microcontrollers are small, versatile, inexpensive devices that can be successfully implemented and programmed not only by experienced electrical engineers but also by hobbyists, students, and professionals from other disciplines."

Today, there are many different types of Microcontrollers out there. The line of Arduino products is a prime example of Microcontrollers. The group at Adafruit also have many products as well as the folks at Sparkfun. Most recently, the Raspberry Pi Foundation announced and released the Raspberry Pi Pico board that is based on their brand new RP2040 chip, which is their first Microcontroller product. The response to the RPi Pico has been astounding, and there have been many companies that have announced products based on the

RP2040 chip. The most exciting thing for those of us who program in Python is that the RPi Pico can not only be programmed using C/C++, like the Arduino, but with both MicroPython and CircuitPython. Many of the products from Adafruit can be programmed using CircuitPython, but the Pico lets you choose between all three.

Let's look at MicroPython, in general, for a moment. MicroPython is the brainchild of MicroPython.org and its founder Australian programmer and physicist Damien George, who created it to support their brand of Microcontrollers. The MicroPython language is a special subset of Python 3.4, originally designed to run on their own pyboard Microcontrollers. While it's a really neat little board with many features, the price is about 30 USD. That puts it out of the reach for many developers who have a shoestring budget for hobby work.

As cool as that sounds, there are some limitations. If you normally program using Python 3.7+, you will

find things like the "f-strings" will throw syntax errors.

At this writing, libraries like numpy, pandas and matplotlib are not currently available in the forms you are used to. However, a small subset of numpy is currently under development, and matplotlib shouldn't be far behind. This however, exposes a problem with MicroPython. There are at least eight different implementations of MicroPython (one for each different basic board type) out there, and drivers and libraries for one board don't necessarily work on another, and, in many instances, isn't even available on the board you are trying to develop for. To make matters worse, CircuitPython, while a different port of MicroPython, is not compatible, and is coded, for the most part, differently than MicroPython. Libraries don't move from one to another.

For years, I've told my son, and many others "If you live or work on the bleeding edge, you WILL get cut!", and believe me, that's SO very

MICRO THIS MICRO THAT

true when dealing with Microcontrollers. I'll explain more in a little bit.

All that having been said, I won't only deal with the RPi Pico board in this series of articles. Yes, I will concentrate on it for a few articles, but I also intend on talking about the Adafruit FeatherS2 microcontroller and some of the Arduino boards, and maybe some of the boards from Sparkfun and others as my budget allows.

RASPBERRY PI PICO

As I write this, the RPi Pico has been available for a little over one month. As you can see in the image below, it's a tiny little thing that's about 2" x 1".

You don't actually need to have



any external LEDs or sensors to see the board work, since there is an addressable LED already on the board. You don't even need to solder the header pins for our first two projects.

Of course, you'll also need a computer to talk to and power the RPi Pico. You can use any type of computer. Many people use a Raspberry Pi 3 or 4, and I use my normal Linux Desktop. I am sure that it also will work on a Windows or Mac PC.

In addition, you will need a copy of Thonny IDE. If you are using a Raspberry Pi as your connection to the Pico, you probably already have Thonny. Just make sure that it's version 3.3.3 or better. If you are using a Linux or other OS PC, you probably will need to download it. You need version 3.3.3 or greater.

The latest version (as of this writing) is 3.3.5. To install it on your Linux machine, you can simply use `wget` in a terminal...

```
wget -O thonny-latest.sh https://thonny.org/installer-for-linux
```

If you don't have `wget`, you can install it by using:

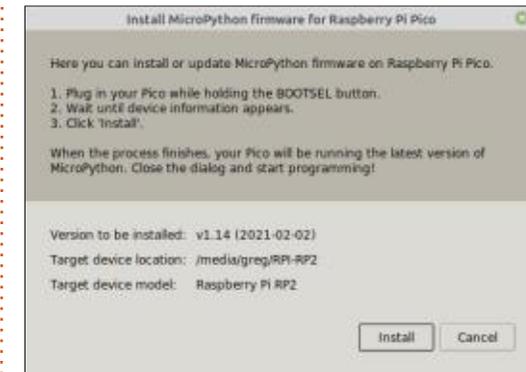
```
sudo apt install wget
```

Once you have the file, change the permission to executable, then run it from the terminal command prompt.

Now start Thonny, and get your RPi Pico and Micro USB cable ready. On the Pico, hold down the white BOOTSEL button and, while holding it down, plug in the cable. Make sure the other end is connected to your computer. In a moment, you will see a new file manager window pop open.



Once you see this window, you can release the BOOTSEL button. Now back to Thonny, and select Run|Select Interpreter from the main menu. You should see a window pop up that looks something like this:



Click on the [Install] button; you should see it start to download the MicroPython for the Pico. When it's finished, you will see a window like this...



Now we can start programming!

PROJECT #1

In project #1, we'll do a very simple program that simply blinks the onboard LED. The code is below.

Now before I explain the code, click on the Run button in Thonny and see what happens. You should see the LED near the USB port come on for about 3 seconds and then go off for three seconds, and start all over again.

Now I'll explain the code. First, you will need to import two libraries, machine and utime. The machine library will almost always be needed, and utime is a MicroPython time library similar to the "big brother Python" time library, only smaller and designed just for MicroPython.

Next, we create an object by pointing to the pin number and telling it whether it's supposed to

be an input or an output pin. We'll call this object "led_onboard". Notice that we are using the GPIO number, not the physical pin number. Other systems like CircuitPython use the physical pin instead of the GPIO number. We'll get more into that another time, but for now, just remember that when you are using MicroPython, you will want to use the GPIO designation.

Next, we create a forever loop that sets the value to 1 (high) or 0 (low). When the pin switches to high, the voltage (in this case) goes to 3.3 volts which turns on the LED. When the pin switches to low, the voltage goes to 0 volts. Once we set the value to 1, we sleep for three seconds then set the value 0 and sleep 3 more seconds, then start it all over again.

Be sure to save your code on your main machine, just in case something happens to your Pico.

```
import machine
import utime
led_onboard = machine.Pin(25, machine.Pin.OUT)
while True:
    led_onboard.value(1)
    utime.sleep(3)
    led_onboard.value(0)
    utime.sleep(3)
```

PROJECT #2

In project #2, we'll make the onboard LED do something a little bit different. Rather than just blinking on and off, we'll use the PWM (Pulse Width Modulation) function. We've done this a long time ago on the Raspberry Pi.

I won't go too deeply into the code with you right now, we'll revisit this in a future article, plus, as I said, we did a similar project on the Raspberry Pi a few years ago. I just think that the throbbing LED is cool and especially with the onboard led.

You should be able to find the

```
# LED Throb 1
# Imports
from machine import Pin, PWM
from time import sleep

pwm = PWM(Pin(25)) # Onboard LED

pwm.freq(1000)

while True:
    for duty in range(65025):
        pwm.duty_u16(duty)
        sleep(0.0001)
    for duty in range(65025, 0, -1):
        pwm.duty_u16(duty)
        sleep(0.0001)
    sleep(0.8)
```

code presented here at my github repository at: <https://github.com/gregwa1953/MicroThisAndMicroThat>

Since we have used the onboard LED for these two projects, there were no external components required. However, for our upcoming projects, we'll need a breadboard, LEDs, jumper wires, resistors, etc. One word of warning though. ALL voltages for the RPi Pico are 3.3 volts. Many older sensors and displays are 5 volt, and will cause problems with the Pico, up to and including burning out the Pico. You should consider getting a Logic Level Converter that will safely change the voltages from 5 volts to 3 volts. Here are two

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sources that can get you started in your search...

<https://www.sparkfun.com/products/12009>

<https://www.adafruit.com/product/757>

Also, before you start interfacing devices to your Pico, you should get your hands on the pinout of the board. You can download a copy of the RPi Pico pinout for your easy reference...

<https://datasheets.raspberrypi.org/pico/Pico-R3-A4-Pinout.pdf>

One final thought. Earlier I said "If you live or work on the bleeding edge, you WILL get cut!". The RPi Pico has only been out a little over a month as I write this. The MicroPython for the Pico (<http://micropython.org/download/rp2-pico/>) seems to be updated on a daily basis and is missing many of the "standard" modules that other boards enjoy. CircuitPython has other things that are missing for the Pico, and is being worked on as fast as the programmers can get the code out. There are so many displays and sensors out there that have no current support on the Pico

either under MicroPython or CircuitPython, or have support on one, but not the other. There is very limited support for using WiFi on the Pico at this point. I suppose this is due to the fact that the Raspberry Pi group never thought that anyone would need networking support on a board this small and low cost.

This is all to be expected this early in the process. Sales of the Pico are so swift, that many retailers haven't gotten a single stick and are still in a "back order" mode, or they have gotten some, but sold out within a day or two. The Arduino RP2040 device is coming with WiFi support, but still doesn't have a release date or price. Sparkfun and Adafruit have boards coming out based on the RP2040, but still haven't been released. If



your display or sensor is extremely old or had limited sales, you might have to "bite the bullet" and consider getting a newer version that does have support, or look into writing your own driver library.

I'm certain that in the next month or so, many of these issues will be solved. I don't think that anyone thought that the Pico or the RP2040 would take off as strongly as it has. The price of the Pico makes it perfect for someone who wants to break into Microcontroller programming and experimentation.

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

Ubuntu Touch is the privacy and freedom-respecting mobile operating system by UBports. Today we are happy to announce the release of Ubuntu Touch OTA-16, our sixteenth stable update to the system! OTA-16 will be available for the following supported Ubuntu Touch devices over the next week:

- LG Nexus 5
- OnePlus One
- FairPhone 2
- LG Nexus 4
- BQ E5 HD Ubuntu Edition
- BQ E4.5 Ubuntu Edition
- Meizu MX4 Ubuntu Edition
- Meizu Pro 5 Ubuntu Edition
- BQ M10 (F)HD Ubuntu Edition
- Nexus 7 2013 (Wi-Fi and LTE models)
- Sony Xperia X
- Sony Xperia X Compact
- Sony Xperia X Performance
- Sony Xperia XZ
- Sony Xperia Z4 Tablet
- Huawei Nexus 6P
- OnePlus 3 and 3T
- Xiaomi Redmi 4X
- Google Pixel 3a
- OnePlus 2
- F(x)tec Pro1

- Xiaomi Redmi Note 7
- Xiaomi Mi A2
- Volla Phone
- Samsung Galaxy S3 Neo+ (GT-I9301I)
- Samsung Galaxy Note 4

The Pine64 PinePhone and PineTab are updated independently of the rest of these devices. The stable channel for the PinePhone and PineTab will not receive an update labeled "OTA-16".

NEW DEVICES THIS CYCLE

With this update we have new devices officially joining the release cadence! This means that these devices will now have a "Stable" update channel available in System Settings -> Updates -> Update Settings -> Channels. You can install Ubuntu Touch on these devices using the UBports Installer:

- Samsung Galaxy S3 Neo+ (GT-I930I)
- By Florian

If you're a porter with a near-ready device that is not in the above list, make sure it can be

installed with the UBports Installer and has an entry on devices.ubuntu-touch.io.

WHAT'S NEW?

OTA-16 is the second-largest release of Ubuntu Touch ever (OTA-4, the switch from Ubuntu 15.04 to 16.04, being the largest).

In this release, we upgraded the installed version of the Qt frameworks from v5.9.5 to v5.12.9. Qt makes up a massive part of Ubuntu Touch, and using it saves us huge amounts of time while creating software that can scale between phone, tablet, and desktop uses. Upgrading it put us back inside Qt's Long-Term Support cycle and gave us a number of new features we hope to take advantage of in Ubuntu Touch and the Lomiri operating environment.

Over 1/3 of the binary packages contained in Ubuntu Touch have changed in this release! This includes not only the various Qt libraries, but also packages that Qt libraries depend on.

Once all that work was done, it was time to fix all of our software to account for deprecated features and new bugs. Rodney left a distinct mark on this release with all of this work, which has been ongoing since July last year.

Upgrading the version of Qt we use and its dependent packages helped prepare us for the Ubuntu 16.04 -> Ubuntu 20.04 transition, which we are currently working to complete.

While the Qt upgrade shone a bright light on this release, we found time to test and integrate a number of other features and fixes you're sure to love.

MORPH BROWSER

Morph, Ubuntu Touch's default web browser, has received a number of excellent upgrades during this cycle.

Kugi completely overhauled the Downloads system, a much-needed change. Instead of a full-screen

page interrupting your browsing at the start and completion of a download, there is now a simple headerbar icon to alert you of the download's progress. The icon turns blue and shakes when your downloads have finished.

The downloads page has also been supplemented with a "Recent Downloads" panel. This panel shows any downloads which have been started during the current browsing session.

Speaking of the current browsing session, a control has been added to the tab management page which allows reopening the most recently closed tab.

Chris re-enabled custom user agents in the browser and added a checkbox which allows you to "Always Deny" location access to a webpage. He also fixed the webpage zoom controller, fixing a problem where the page's zoom didn't always follow your settings.

It is now easier than ever to use Morph in a tablet or desktop situation. Tabs are taller and easier to hit, and the browser won't rotate itself whenever its window is taller

than it is wide.

MAKING DEVICES MORE READY FOR YOUR POCKET.

The upgrade of Qt to 5.12 allowed us to finally integrate the gst-droid work that Ratchanan has been working on for what feels like forever. This brought video recording support to 32-bit Android 7 devices. The newer GStreamer support also allowed us to bring up a hardware accelerated camera viewfinder on the PinePhone.

Alfred enabled video recording on the Sony Xperia X and fixed problems with call audio being too loud on the OnePlus 3 and Xperia X.

If you're a device porter with Android 7 devices and they *don't* support video recording yet, ask in the UBports Porting group on Telegram. It might only need a couple of configuration changes to enable camcorder on your device.

Changes for app developers
Qt 5.12 brings its own changes to app development, including a number of performance improvements and new features. However, we also removed the

Oxide web rendering engine with this release.

Oxide was a Chromium-based web rendering engine created at Canonical for the "Ubuntu for Devices" project. After Canonical dropped that, we knew that we would not be able to maintain the rendering engine.

The default web browser switched from Oxide to QtWebEngine in OTA-5, released on October 12, 2018. Since then, we've warned people not to use the Oxide rendering engine or Ubuntu.Web, its simpler QML component counterpart. The replacements for these are importing QtWebEngine or, even better, using the Morph.Web wrapper.

With Oxide removed, any applications which depend on it directly will cease to function. Apps which used Ubuntu.Web may still work, but will likely have unforeseen problems. If you're an app developer and you've got an app which depends on Oxide, we can help you make the transition to QtWebEngine. Find us at forums.ubports.com, [\(at\)UbuntuAppDevEN](https://t.me/UbuntuAppDevEN) on Telegram,

or [#ut_appdev:matrix.org](https://t.me/ut_appdev) on Matrix.

ANBOX INSTALLERS INCLUDED BY DEFAULT

The Anbox installer is now included with Ubuntu Touch. This allows users of supported Anbox devices to use Anbox without modifying the Ubuntu Touch root filesystem. It will also prevent Anbox installations breaking with every update.

Note that Anbox itself is not installed by default, and it will not run unless it is installed. To install Anbox, see "How to install" on our Android apps documentation.

OTHER FIXES

This release also features a number of less mainstream fixes that are all exciting to us.

Marius fixed auto-brightness support on Android 9 devices like the Volla Phone.

Jami Kettunen added support for controlling the flashlight on Snapdragon 835 and 845 devices.

Lionel Duboeuf added support for animated images to the default Messaging application. He also fixed a number of problems with recording audio, playing back audio, and timing across the core apps.

Ratchanan was essential to finding and fixing an issue with seemingly random segmentation faults and "Stack Smashing detected" errors in this release. The cause was actually an incredibly convoluted web of assumptions between Android's bionic libc and our glibc which couldn't be mediated by Libhybris (and not a single case of stack smashing or segmentation violation). That might be worth a blog post someday...

"natur-produkt" fixed switching the mobile data SIM in some cases on Android 9 devices.

Between his work on TELEports (the Ubuntu Touch Telegram client) and six new device ports, Florian made it possible to rotate the "spinner" splash screen upside-down. Who knew some devices had their screens installed upside-down?

Joan "Cibersheep" fixed the

Catalan keyboard layout, making it far more consistent. Joan also created the release mascot for OTA-16, the tangram cat. This release truly was like a cat: All was quiet, until it was suddenly a complete mess. Everything was all over the place for a while. But eventually, it settled down and all was beautiful once again.

Mateo Salta made some quality-of-life tweaks in Morph Browser and system-settings, including moving the "Update Settings" pane of the Updates plugin from a strange bottom edge control to the header bar.

Alfred found and fixed an AppArmor error when using QTemporaryFile after the Qt 5.12 transition. He also made the Xperia X a stellar device to use every day by improving its battery life and general stability. In particular, the device always wakes on the first try with the power button and always wakes for calls and messages.

Caleb Connolly took some time out of his fervent work on mainline Linux for the OnePlus 6 to fix haptic and LED feedback on the device with hybris.

We broke Daniel Kutka's fix to tab previews in morph-browser with the Qt 5.12 transition. Luckily, he came back to fix it again.

"NotKit" has mostly been working on pushing Ubuntu Touch onto new, interesting devices. You'll see his work mainly on GitLab in the "Community Ports" section. However, he snuck in a fix for showing the correct device name in the "About" page on some Android 9 devices.

WHAT'S NEXT?

Unfortunately, this release marks a slight slowing-down period for Ubuntu Touch updates. We still plan to issue Ubuntu Touch releases every 6 to 8 weeks as usual, but the changes between releases will likely be less pronounced. This is due to our continuing work building Ubuntu Touch based on Ubuntu 20.04, which will better prepare us for the long-term future.

That said, there is already plenty in store for OTA-17. On the list of proposed updates is a navigation history feature when pressing and holding the Back or Forward buttons in Morph browser, fixes to

the alarm's "snooze" functionality, and new keyboard layouts. It should be exciting, even if it isn't a blockbuster.



THE DAILY WADDLE

JUST HEARD THAT AMISH
PENGUIN SAY HE WAS GETTING
A SECURITY PATCH?

YES, HE'S PLANTING
A THORN BUSH...





A while ago, a friend announced that he was planning to write a book about the Australian Army's involvement in France during the First World War. Having recently retired with plenty of time on my hands, I volunteered to produce some maps to be included in the book. During my working life, I had been involved with Geographic Information Systems (GIS) and assumed that the open-source product QGIS would be just what was needed. Very soon I realised that was not the case. It does an excellent job of storing and editing the location and overlaying of masses of geographic information. What I needed as well was full control over the layout of textual information such as town names, military positions, and movements.

So I turned to Inkscape and worked my way through the first dozen or so instalments of Mark Crutch's tutorials starting in Full Circle issue 61 back in May 2012. This gave me all I needed to get started – sorry Mark but black-and-white maps printed on paper don't make use of the latest 100+

episodes. What follows is the basic outline of how I produced the maps together with some tips I picked up along the way.

GETTING STARTED

First thing is to find an existing map of the area of interest. The extent of the map varies depending on whether this is for a specific battle or a larger area showing troop movements. Sometimes the author was able to supply a copy of the 'Trench Map' used by the army at the time, but, more often, I started with a list of towns that were in the area. I found a Map of France website (www.map-france.com) very useful here as it allows searching French towns by name, but there are many other websites that can be used. I was surprised how often the same name was used for two or three towns in different parts of the country. Once I found the area I wanted, I would take a screenshot and save it as a jpg file.

Now start up Inkscape and Import the saved JPG file. On the

Import dialog, choose Imbed and From File. This imports our base map and displays it on the screen. In the Layer list down the left side of the screen you will see it named 'Layer 1'. Rename the layer to something like Background by right-clicking on the name. This layer will not appear on the finished map, but the features required will be transferred onto new layers.

LAYERS

I found the more layers I had the better. Starting with the first background layer, I added separate layers for every type of feature to be shown: coastlines, roads, railways, rivers, lakes, woods, troop start positions, end positions, movement arrows, and more. Roads and railways actually had two layers – see below. I usually ended with up to 20 layers on each map.

Even though the final result was to be a black-and-white map, I often used colors while capturing the linework – blue for water, red for roads, black for railways, etc, then changed them to black later. Having

all of the one feature on its own layer allows you to select all those features and change the size, line style, text font, or whatever, in one step.

CAPTURING LINEWORK

I used the Draw Bezier Curves and Straight Lines tool, and clicked on the start of a line then double-clicked on the end point. This gave me a straight line between the two points. Zoom in at one end and using the Edit Paths by Nodes tool, double-click on the new line to create a node then drag it to the correct position. Repeat this procedure until you get to the other end. This is what it looks like part way through, capturing part of the France-Belgium border.



ROADS AND RAILWAYS

Depending on the scale of your map, the road may appear as a single line, but most of the battle plans were drawn at a larger scale, requiring roads to be shown as two parallel lines, with a gap between. After some experimentation, I found the easy way to achieve this was to start with a single black line, thick enough to cover the whole width of the road, as my Roadsides layer. Then duplicate that layer, rename it as road centres, change the color to white, and decrease the width a little to allow the edge of the roadsides layer to show through. As you can see below, road intersections are handled as they should be.



Railways are just as easy, just use a dashed white line as your railway centre.

TOWNS

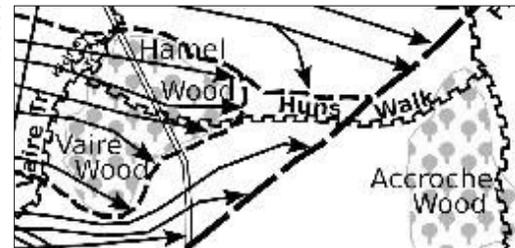
Again these change with the scale, sometimes shown as dots, sometimes with a black border and a shade of grey inside. Be aware of where the town layer is in the list, depending on whether you want to see other features visible through the town or have the town obscuring anything underneath. When I was showing the towns as dots, I would use the circle tool to draw one and fill it with black, then copy it for all the other towns to make sure they were all the same size.

Town names (and any other text) usually need to be on a higher level, so the name is not covered up by other features. I found getting the size and position of text was surprisingly time consuming.

WOODS, TRENCHES AND SPECIAL SYMBOLS

While Inkscape comes with a good selection of line styles and area shades, it does not have much in the way of mapping symbols. Here I searched through the range

of Inkscape tutorials and was able to find what I needed. For instance, a wooded area is usually shown covered by little tree symbols. To achieve this, I zoomed right in, and, on yet another layer, drew a tiny tree, and made a copy of it a little above and to the right. Then, using the technique described in the Inkscape Tutorial on patterns-for-mechanical-drawings, I was able to produce an acceptable result. Another tutorial on drawing ropes helped me create and use a symbol to show trenches (there were a lot of them in that war).

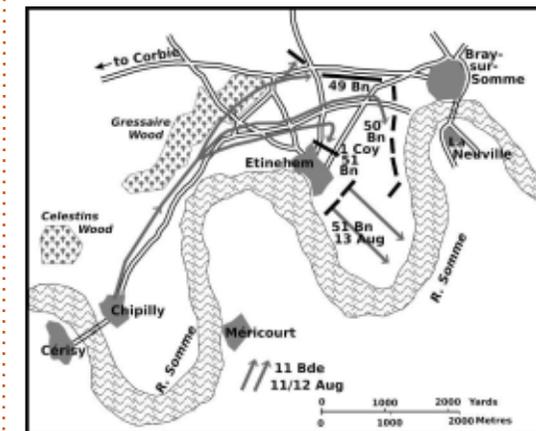


OUTPUT AND EDITS

The only way to save your work in Inkscape – so you can work on it later – is as an SVG file. However, when sending my (draft) maps to the author, he needed JPG files. Inkscape can export only to PNG files, which I then converted to JPG using GIMP and emailed them to him.

Often (well always), they needed changes so he would print them out, mark the changes in pencil, scan that, and send it back as another JPG file. I would add this as a new layer to Inkscape, and stretch it so that it was the same size as the original, making sure to retain the same aspect ratio. This step was often repeated several times.

Eventually, we were both happy, and a final JPG file was produced to send to the publisher. Altogether, over 30 maps were produced for the book which is now awaiting publication. Here is a sample of a finished map.





HOW-TO

Written by Ronnie Tucker

Write For Full Circle Magazine

GUIDELINES

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

RULES

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

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

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

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

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

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

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

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

TRANSLATIONS

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

REVIEWS

GAMES/APPLICATIONS

When reviewing games/applications please state clearly:

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

HARDWARE

When reviewing hardware please state clearly:

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

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



REVIEW

Written by Ronnie Tucker

Entroware Ares

My old PC was starting to really show its age. It was so old I don't even remember when I got it, or how I got it. It was time for an upgrade, and I wanted to support Linux PC suppliers. But I didn't want a laptop. The screens are too small for my aging eyes. Eventually, I went with Entroware.

ENTROWARE ARES

Entroware doesn't have a large choice of machines. They have an all-in-one unit and two desktop tower machines. Since I'm not gaming, and looking to save space, I went with the Ares. It's an all-in-one unit. The only thing I customised in my Ares was to up the RAM from 8GB to 16GB. I stuck with the 240GB SSD drive as I have other plans for my storage. I did add a keyboard and mouse, but more on that later.

The final spec:

- Core i3-10100 4.3GHz [4 cores, 8 threads]
- 16GB DDR4 2666MHz RAM
- 240GB SSD
- Ubuntu 20.04 LTS

- UK Power Lead
 - 3 year warranty
 - Logitech keyboard & mouse
- = £774.97

One negative thing I do want to highlight here is their way of taking payment. I paid using my regular bank/credit card. I use this same card with Amazon, eBay, etc, and everyone gets their money

instantly. For some reason, Entroware needs 7 days to process a payment. It does tell you this on their 'Ordering Information' page, but really... it should tell you this on the page when you're about to click to pay. I thought something was wrong when my order said 'processing payment' for a couple of days. But for some reason PayPal is almost instant. Very strange.



THE EAGLE HAS LANDED

The machine arrived via DPD in a big box. Plenty of padding. In the box was the Ares, and required cables. But, also a nice little sheet of Ubuntu stickers, an Entroware pen, and Entroware branded pad. Nice!



As you'd expect for an all-in-one it has a base to allow it to stand on your desk, but I mounted mine on a wall bracket with an arm.

On the left side of the screen is the on/off button. Right side has two USB ports. The on/off button does baffle me a bit. If you press it, you immediately get the option to shut the machine down. There doesn't seem to be any way to keep

REVIEW

it running but turn the screen off!

One downside I have to mention about the hardware is the placement of the other ports. There are two USB ports on one side of the screen. Which is good for easy access. The remaining USB ports, HDMI, network port and power are at the bottom of the screen, but two inches up. So you have to tilt the screen WAY back to even hope of seeing the ports. So plugging things in at the bottom of the screen takes a fair bit of fumbling around.

KEYBOARD & MOUSE

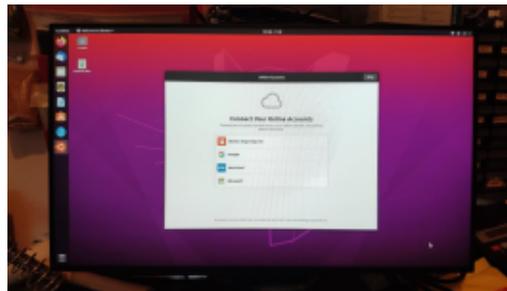
I checked the box to include a Logitech keyboard and mouse. This added £25 to my order. I was gobsmacked to see that they've included a WIRED keyboard and mouse! Why not include a Bluetooth or wireless keyboard and mouse? I mean I did pay £25! It takes up two USB ports when it could have been Bluetooth and used none. And at £25 it was a total rip off. I could have bought a wired set off Amazon for less than half that.

FIRST BOOT

When the machine is first switched on you are presented with the first of several Ubuntu installer screens. It's all easy, basic, stuff. Set your language, region, username and password, the usual stuff. I won't bore you with screens of every step. If you've installed Ubuntu, then you've seen these screens before.

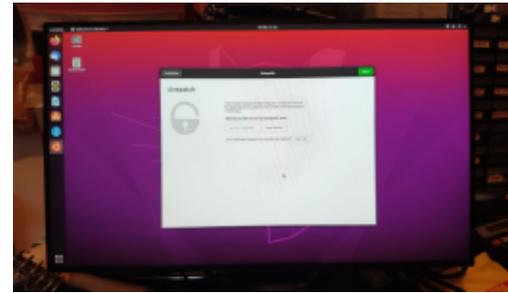


Once you're into Ubuntu it's time to do a bit of Ubuntu setup. First is to connect any online accounts. I did add my Google account.



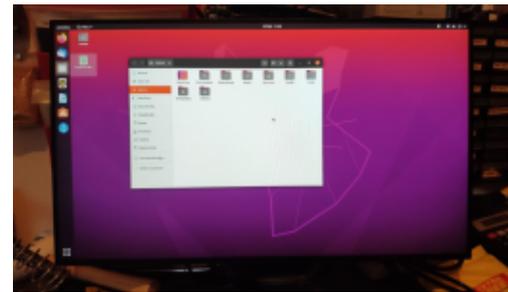
Next, you set up Livepatch. Which, being honest, I'd never seen

before. So I activated that.

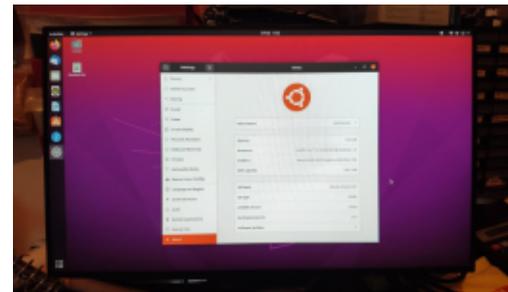


READY TO GO

With all that done, it's now into the desktop.

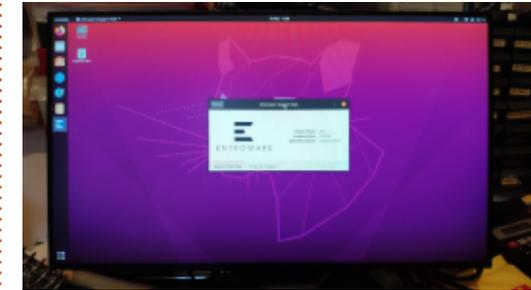


Time to check and make sure I got what I ordered.



While looking through the

preinstalled stuff, I did notice that Entroware has a nice little support hub app which is nice.



There doesn't seem to be any bloatware, just the basic Ubuntu installed software.

SNAP TIP: one thing I noticed when installing software in Ubuntu these days is that it installs a lot of snaps. This gave me grief (not Entroware's fault) when I tried to open files from external drives in things like GIMP. When you install something in the Ubuntu Software app, it finishes installing and the buttons at the top say 'Open' and 'Permissions', then make sure you click Permissions and set it how you like with regards to read/write external drives and with/without print access.

For storage, what I've done is put all my files on a USB external 1TB hard drive and have another 1TB drive to hold backups. The only

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thing stored on the Ares is my Dropbox and Spideroak files. Dropbox doesn't like being installed on the external drives (for some reason), and Spideroak plops its folder on the machine by default and trying to move it is more hassle than it's worth. Of course, to clarify, none of that is Entroware's fault.

CONCLUSION

I'm very happy with the Entroware Ares. The screen is lovely and big and bright. It whizzes along and I reckon Ubuntu boots within about 12 seconds (give or

take an Entroware screen where I've no idea what it's doing). I've used the HDMI port on the Ares (shown right in the photo) for a second monitor (left in the photo) which works perfectly.

Make no mistake, I could have gone with an £800 desktop machine with a nice graphics card which would have been more than capable of playing modern games, but I really don't play any games these days. My Ares can easily handle Minetest and that's good enough for me.

PROS:

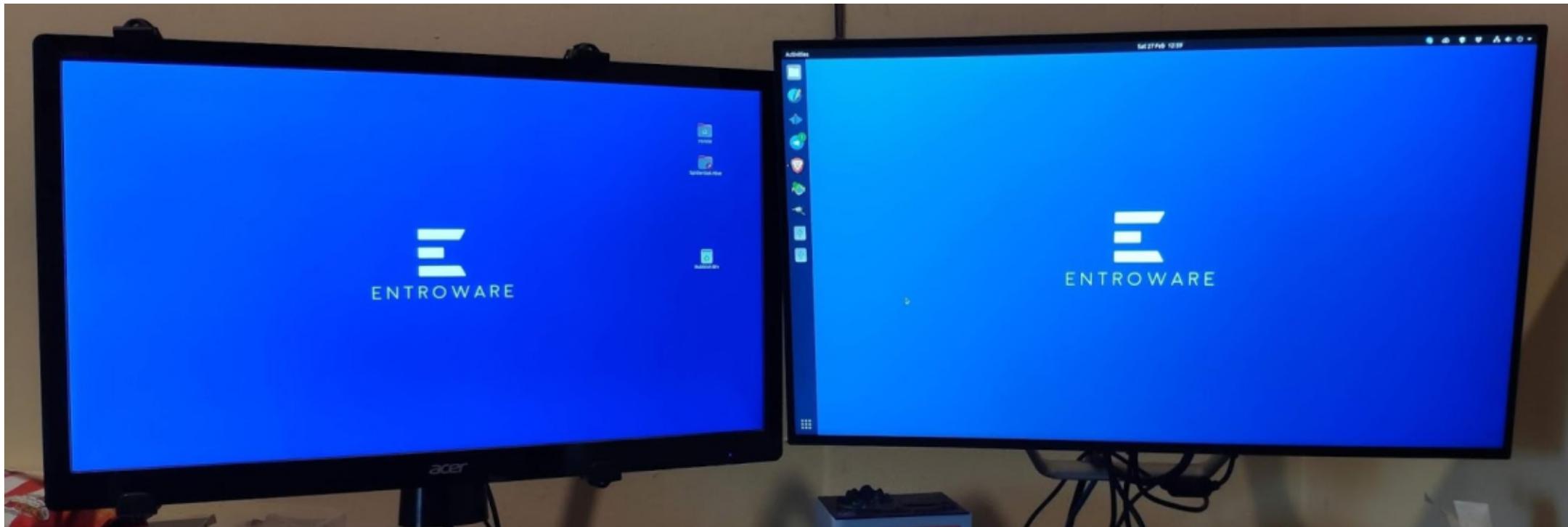
- Ubuntu pre-installed
- Screen is lovely and big and bright
- Free stickers, pen and pad!
- Entroware support hub to help with any issues

CONS:

- Extra 7 days wait for card payment
- Keyboard and mouse is daylight robbery!
- Placement of the bottom ports is a bit fiddly
- No way to turn just the screen off? Really?



Ronnie is the founder and (somehow) still the editor of Full Circle Magazine. He's a part-time artist and his work can be seen at <http://ronnietucker.co.uk>

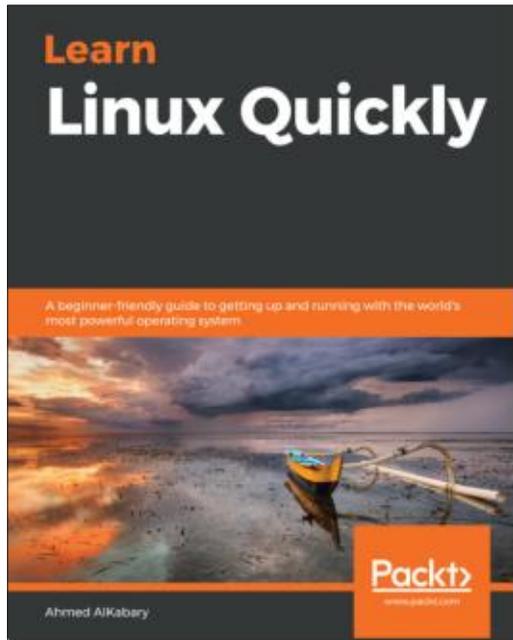




BOOK REVIEW

Written by Erik

Learn Linux Quickly



Web Page: <https://www.packtpub.com/cloud-networking/learn-linux-quickly>

Price: 27 USD to 39 USD

Blurb: "This Linux book is a practical guide that lets you explore the power of the Linux command-line interface. Starting with the history of Linux, you'll quickly progress to the Linux filesystem hierarchy and learn a variety of basic Linux commands. You'll then understand how to make use of the extensive Linux

documentation and help tools. The book shows you how to manage users and groups, and takes you through the process of installing and managing software on Linux systems. As you advance, you'll discover how you can interact with Linux processes, and troubleshoot network problems, before learning the art of writing bash scripts and automating administrative tasks with Cron jobs. In addition to this, you'll get to create your own Linux commands and analyze various disk management techniques."

This book should have been named: working at the terminal, your first 100 commands. Thankfully, the "Linux history" is kept to one page.

The book tries a bit too hard sometimes, that it almost ends up in confusion. Let me give you an example. This spaghetti (below) illustrates the '.' and '..' files in the directory structure. Should I frown?

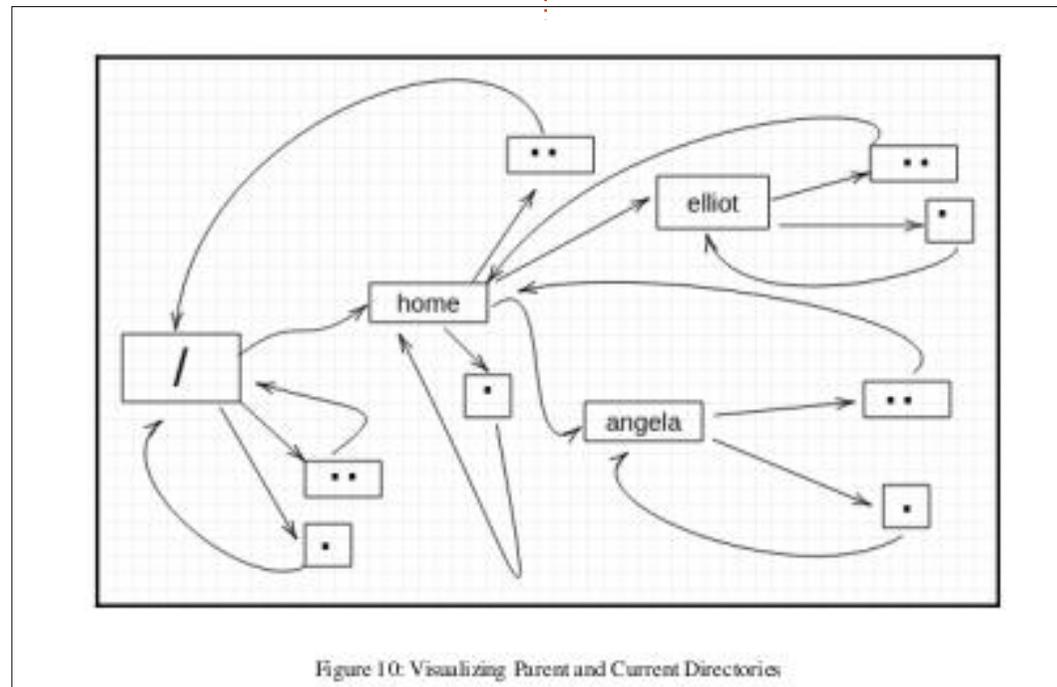


Figure 10: Visualizing Parent and Current Directories

That said, this is not a 'read' book but a 'do' book. You gain nothing from reading the book alone. This book covers about 100 bash commands, and a few pages on editors and other packages. Though I looked forward to this book, it turned out very dry and semi-formal (and a horrible font to boot). Technically, the information is correct and covers the basic usage, yet I felt a bit skimmed, compared to other books on the subject. No insights, no fun, four lines of text explaining what was next, and printed examples of directory listings and screen outputs. Here and there I found a few nuggets, but I also felt like a prospector. After a few chapters I caught myself skimming.

As for the Quickly part, I am not quite convinced, but I can say that it is faster than using the "Linux Bible". I would place this one as a book for someone who has some Linux experience, but it is his first or second year with the OS. It is not quite a "reference" book either, and not as quick as "Learn Linux in 24hrs". What I did like was that the

book did not have four warnings and four tip blocks per page – breaking your stride, which is why I like Packt and No Starch Press books.

I am going to pick a spot and tell you what is there and what is missing. Under the heading: “Corrupting and fixing filesystems”, you are shown how to corrupt a filesystem and how to fix it. What you are *not told, is why you need to unmount the filesystem. You are just told to unmount it. I am a why person; as a kid, I took things apart not only to see what was inside, but why it was the way it was. Once I understood, even more or less what was going on, I could repair it. Everyone thought it was a ‘smart’ kid fixing their radio’s at seven years old, but I knew why it was broken and smart had nothing to do with it. The same principle applies here; if you tell your readers why, they will put two and two together and the “how” will be a lot easier. I realise there is a section on man pages, but just a little more explaining and a little less directory listing is what this book needs. Yes, almost every page has either a directory listing or a few terminal outputs. I suppose you could say that this is for people who do not

have a Linux computer or VM, but I would counter by saying that if you do not have these things, you should not pick up this book.

As this book covers mainly bash commands, it follows that once you have learned these commands, a good idea would be to bring it all together in bash scripting at the end. Maybe do something useful or “real world” examples, like automating docker or something. One would think, but the scripting is squirrelled away in the middle somewhere, and has “hello friend” and “hello world” over it instead of scripts deploying users or filling a database with dummy info or whatnot. The exercises at the end of each chapter are short ‘n silly, like a few true/false questions. I did not really care for them. As for “creating your own Linux commands”, it’s just alias. I can say I was disappointed.

At the end of the day, the book teaches you bash commands with some sides, like meat and salad, no veggies or starch. It does not do what it says on the label. Grab this book on discount for a fiver, but I would not pay full price for it.

As an alternative, I would

suggest “Learn Linux in 5 days” by Jason Canon, Which is basically the same book, with clear-to-read fonts, lots of screenshots, and only about 200 pages.

I will put this book in the back of my Linux bookshelf.

Was I unfair, did I make a mistake? Let us know on: misc@fullcirclemagazine.org



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



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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.

So, the other day my boss got me to order some cell phones for a client. One of the retail stores was 2k cheaper than everyone else – probably incorrect pricing, but we bought anyway. I think they realized afterwards, but by then we had already paid and were waiting

to receive them. (There was a delay, as they have to clear EFTs with head office.) I called to find out if I can collect yet. I was paired with another customer who was calling about his M\$-office license. We realised we were 2 customers and went about calling again. Again, we got matched. Eventually I asked him what the issue was. He said he was in a farming community, and bought office licenses, and it does not work. I offered to help and within a minute we had it sorted via Anydesk. I immediately had a new client and they lost one. All because they did not pay a receptionist minimum wage, and entrusted automated machinery to handle their calls. I am not saying automation is bad, but some things require a human touch. Would that CEO miss 10 grand a month off his salary to pay someone to answer the phone? Definitely not. Taking 10 grand from all the upper management salaries and employing an army of receptionists, would not even dent their strides. Losing customers will hurt everyone else in the company. CEOs walk away with golden

handshakes when the company folds, workers get retrenched... (am I wrong?). Linux and most of its related applications are free. Would it hurt you to donate a coffee to a developer of your favourite application(s)??? OR... Would you rather he/she develops for Macs – for the crumbs from the Apple store?

Q: Hey man, how can I get more wallpapers? Is it possible to get all back issues of the Ubuntu wallpapers going back all the way to Warty? Thanks.

A: Open the Synaptic package manager and do a search for wallpapers. Tick them all and install and enjoy!

Q: My question may be a bit mundane, but I need to know. I want to make a script of applications PLUS their dependencies for installation, so that I can copy it to a USB stick and use it over and over. I currently hop between Ubuntu distros and want

to quickly be able to have the same machine.

A: The easiest way I know of is to open Synaptic, mark all the packages that you want, and Synaptic will mark the dependencies for you. You then simply click on 'file' and 'generate download script'. Name it, and save it to your thumb drive. You need to install Synaptic only on the PC you are making your script on.

Q: I tried your tutorials, but I keep getting "Couldn't open a raw socket. Error: Permission denied (13)" with nmap. I have obviously installed it wrong, but I even tried the administrative command-line and still nothing. I tried with Ubuntu 18 and 20.

A: "Administrative command line" is telling. You will get that error in WSL as windows took that away long ago "to prevent hackers using windows to hack with". SMH.

Q&A

Q: Guy, I am getting so frustrated with Xubuntu 18.04 and VLC. I have tearing ¾ down the screen. All the stuff about compositers and the like is not working. It is noticeable even with MP4 files. I download an ASMR video from youtube, and the playback is torn. It's not even H.264. My laptop is an i5 with 8GB of memory and a 256GB SSD. No proprietary cards or drivers. This should not happen.

A: Step1: set VLC video output to "OpenGL video output".

Step2: With sudo, create a folder and file here: /etc/X11/xorg.conf.d/20-intel.conf . Put this code inside that file and reboot:

```
Section "Device"
```

```
Identifier "Intel Graphics"
```

```
Driver "intel"
```

```
Option "AccelMethod"  
"sna"
```

```
Option "TearFree"  
"true"
```

```
EndSection
```

https://wiki.archlinux.org/index.php/Intel_graphics#Tear-free_video

Q: My dual booted computer (Ubuntu 20.04 + Windows 10) has the following error. "Dirty bit is set. FS was not properly unmounted and some data may be corrupt."

A: Usually, that happens when the Windows partition did not shut down cleanly. However, it could be the Ubuntu filesystem, but it is an 80/20 chance that it's Windows. Fscck your linux partition, and run 'chkdsk /f' on your windows one.

Q: I am new to Xubuntu, I come from Windows 8, where I used Total Commander to bulk rename my files, for instance removing those numbers and letters from Youtube videos if you grab the whole playlist. I have looked at alternative.to, but I don't get along with those file commanders.

A: Thunar is actually very capable there; simply select all the files you wish to rename, and use the automation, like remove 8 characters from the end and you should be golden - without downloading and installing extra software.

Q: Hi, quick one. Some things like setting fan speeds and fast charging are missing in Ubuntu, that I could do with Windows, before. How can I get that Lenovo control panel in Ubuntu to use those functions?

A: You can try installing the application with WINE or you can contact the manufacturer. Those kinds of things are usually proprietary, so it takes a while to filter to FOSS.

Q: After catching up on Mr Robot, I installed Kali Linux next to my Ubuntu install. I want to keep my Ubuntu PPA repositories. Is there a way for me to quickly transfer them from one install to the other, without having to boot between the two?

A: Simply, no, and don't do it, as you will break your Kali updates.

Q: It has become time to say goodbye to Leopard on my Quad G5. Ubuntu seems to be my preferred distro. I say 'seems to be' as I have not yet installed it. I have

become attached to Runecats Roccat. Is here a way I can make it work in Ubuntu? (This will influence my choice of distro).

A: You need to check a few things first, like: does Ubuntu still support PowerPC? As far as I know, Roccat browser is Mac only, meaning it will not run on Ubuntu and as the code is not open source, you can't even compile it yourself.

Q: I am trying out Ubuntu Unity remix. I would like to edit the menu a bit. How would I do that?

A: I am not sure. You would have to see what menu the remix uses. If you want to catch some fish on dry land, you can try alacarte. Otherwise, I found this: <https://sourcedigit.com/24626-how-to-edit-application-menu-in-ubuntu/>

Maybe one of our readers can help?

Q: My question is ubuntu related, but also not quite, so if you don't answer, it is OK too. We have recently converted to solar energy with gel batteries. I sit up late at night on my computer, when the

power is low. I don't want to drain the batteries too quickly. My friend suggested I use Ubuntu to lessen my power usage. However, I am not sure if it is Ubuntu, Kubuntu, Xubuntu, etc, that I should use. Can you point me in the right direction pls?

A : The biggest draw would be your PSU, don't use a 750W when a 250W will do. Secondly, check out wattOS. (I read somewhere it is making a return). Based on Ubuntu, but optimised for minimal power usage.

Q : Why can't I update from Voyager - Ubuntu package based - 18.04 to 20.04? I am quite upset about this.

A : Theoretically, it is possible, but they say on their website that there is no upgrade path. You need to back up and do a fresh install of 20.04, then make a user with the same name and copy your backed up user in again. See it as an opportunity to start fresh.

Q : I am currently still on Ubuntu 18.04. My issue is that I have

tried more than 10 times to download e-sword and install it. I am not a fundi, but I feel very dumb here.

A : Are you using crossover or wine? Why don't you save yourself the trouble and install Xiphos? It is compatible with e-sword and is Linux native. E-sword is Windows only and I do not see a wine bottle for it.

Q : Help! What does this mean? E: Malformed entry 37 in list file / etc/apt/sources.list (Component) E: The list of sources could not be read. E: _cache->open() failed.

A : Go to line 37 in your sources.list and comment it out. (Use a # at the beginning of the line). Don't just add sources without knowing they are for Ubuntu.

Q : How can I make Firefox look more like Chrome in Ubuntu? It just seems dated compared to Chrome. I can't waste bandwidth having to update Chrome on a daily basis.

A : I am a bit unsure what you want, but I assume it is that Chrome has more screen real estate. Click on the hamburger menu in the top right, choose customize. Then look at the bottom-left and take the tick off "title bar" and you should have a Chrome look-alike.

Q : I have a 2GB swap partition as well as a 2GB swap file. I see that system monitor shows that my swap space is 2GB. How do I know which one it is using?

A : Open a terminal and type:
`swapon -s`

Q : I added some applications via Gdebi via downloaded *.deb files. I needed space on my SSD and deleted all my debs. How do I now uninstall them easily?

Also I am not sure what they all were, so trying to download them one-by-one to uninstall is not an option. I am not too sure of myself at the terminal, so I would like to avoid it if I can. Thank you.

A : Install 'Stacer' and use its uninstaller to remove the applications. You should be able to see all installed applications. I do suggest that you run a `sudo apt-get autoremove` from the terminal once you are done to clean up orphans. (I am almost sure the clean-up option in Stacer does not do that).

Q : I want to back up a Centos server to import into a new Ubuntu server. I am new to all this, and don't want to skip any open files in use. How can I see that? Also, who is on the server so I can ask them to log off before I back up.

A : Linux is not Windows, you can have multiple access to a file. That said, you can have a look at what is running with `ps` (use `ps -aux`). You can simply type `w` to see who is on. Depending on your backup software, you can create a snapshot as-is even if someone is busy editing a document.

Q : I want to know something that has been bothering me. Is POPOS Ubuntu or not? Why should I choose it over normal Ubuntu?

A : Yes, currently POP OS is Ubuntu - with extras to make your life simpler with their hardware. Have a look here: <https://itsfoss.com/pop-os-vs-ubuntu/>

Q : Why did Ubuntu change the server install?

A : Not sure, we are not at Ubuntu, but a community magazine, more information here: <https://discourse.ubuntu.com/t/server-installer-plans-for-20-04-lts/13631>



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.



DistroWatch.com

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



Website: <http://nepos.games/nebuchadnezzar/>

Price: \$ 19.99 USD

Blurb: "*Nebuchadnezzar is a classic isometric city builder game, inviting players to experience the mysterious history and culture of ancient Mesopotamia. In the campaign, players get to rule over influential historical cities filled with magnificent monuments.*"

If you remember Pharaoh or Caesar or Zues, this is more of that, in high resolution. If you have never played these types of games, it is essentially a city builder. If you have, this is a homage to those games with a perfect replication of the fun you had in 1999.

I have always loved that name, such a strong name. Nebuchadnezzar! (Say it again, oohh gives me chills... hehehe). The premise is simple, your royal highness has to lead his people by building them a city, with monuments to yourself of course, all the while managing space and

resources. Just don't go insane like Nebuchadnezzar did! Sounds like something you would like to play, then read on!

INSTALLATION

I used the GOG installer for this one. Though this game has a minimum install requirement of Ubuntu 18.04, you cannot run it on Ubuntu 18.04 as the game was compiled against glibc 2.29, which is not available in Ubuntu 18.04 because of dependencies.



So your first task as king of Baby-lonia, excuse the pun, is to get your fledgling kingdom off the ground. You need to plan, however; your grain needs to get to the mill, and there needs to be a road from the mill to the baker, as well as a road from the housing district, so that people can go get bread. You always have to balance supply and demand. To understand this, look at a modern version of this game, Frostpunk. If you have not tried Frostpunk yet, why not? It is a great game. The secret to the game: as your city grows, what worked for a

small city, does not work for a medium city, etc. How you overcome these problems is what makes the game challenging and interesting.

The game is presented to you in an isometric view. The graphics are just awesome. The game is true to its roots, and there is no 3D. I am a fan of isometric games, so I was fine with it, but those who have grown up with 3D everything may have an issue with it. The viewport is locked to one view only. The scaling is much better than other games of this type, and your little people are well animated. Building monuments grants prestige, and they look amazing, and the sense of scale really helps with the immersion. (I think I will try for the tower of Babylon!).

The music is there, in the background, and stays there. It has that Arabian nights feel, and suits the desert setting perfectly. I would have preferred a full soundtrack for \$20, but it is not a deal breaker.

What was amazing, is the wiki built into the game regarding ancient Babylonia. If ever you needed facts on anything Babylonian or about the area, skip Wikipedia and come straight here. My advice is not to skip the campaign briefings as they really fill out the imagination. You will realise that you start long before Nebuchadnezzar, probably even before Nabopolassar, and it definitely was an eye-opener for me. This is such a value-add for me, but if you don't like random factoids about history, you may get bored. To immerse yourself further, I suggest watching some videos on YouTube regarding the ruins. See: <https://www.youtube.com/watch?v=ya1lo0F468c>

Unlike SimCity, these types of games introduce tiers, where, say, at the first tier you need only food and shelter, the next tier may be religion, and now you need temples and different resources to progress. You can also regress to a previous tier, if you can not keep up with supply and demand. Tier two may need fountains and gardens to maintain the status quo, and to have those you may need different resources still, making the micro management more intense. Twenty years ago, this type of gameplay was the norm; now, however, it feels more of an armchair general situation. Again, if I compare it to a modern version of the genre, like Frostpunk, the gameplay feels

lacking. There is no innovation, there is only a higher resolution from Zeus that I played twenty years ago. That was a bit disappointing. That said, there is nothing "wrong" with the game, but there is that "it would have been nice" that is missing, if you know what I mean. It still is a time sink, where you can while away a lazy Sunday afternoon without noticing it. If your intention is nostalgia, the game does not disappoint. You can simply drop in and play, without reading a manual. The mechanics are simple and easy to learn, making the entry to the game accessible to all. Like the games that came before it, there is some replay value, but not much.

I cannot, in good conscience, tell you to splurge \$20 on this. I'd wait until it is on sale before buying it.

If you are nostalgic, I recommend looking here:

<https://github.com/Keriew/augustus>

or

<https://github.com/bvschaik/julius>

The Caesar games are also \$5.99 on GOG at the time of writing.





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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

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



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