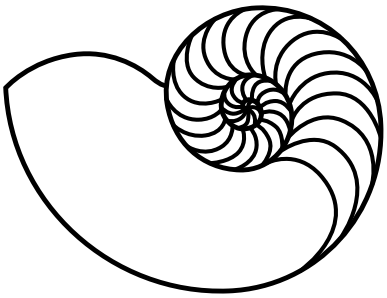


MUUGLines

The Manitoba UNIX User Group Newsletter

Volume 33 No. 1, September 2020 Editor: Trevor Cordes

Next Meeting: September 8th, 2020 (Online)

The meeting this month will once again be virtual as the U of W remains closed to the public.

Feature Presentation: AWS Quickstart

For the new user, the multitude of AWS services and configurations can be daunting. Wyatt Zacharias will show how to start an AWS account from scratch, including how to properly set up your user credentials, and how to get a VM up and running for the first time.

RTFM: fd(1) – a simple, fast, user-friendly alternative to find(1)

Most Linux users are all too familiar with the **find** command and its frustrating syntax. This month, Brad Vokey will show us an alternative to the **find** command, called **fd**.

Some of the features of **fd**:

• Convenient syntax: `fd PATTERN` instead of `find -iname '*PATTERN*'`.

• Colourized terminal output.

• It's fast!

• Uses smart case by default.

• Ignores hidden directories and files, by default.

• Ignores patterns from your `.gitignore`, by default.

• Uses proper PCRE!

• And the command name is 50% shorter than **find**. :-)

The latest meeting details are always at:
`https://muug.ca/meetings/`

Where to Find the Meeting:

`jitsi.merlin.mb.ca/muug.2020.09`

This month (just like last month) we are using our own online Jitsi meeting server hosted by `merlin.mb.ca`.

The virtual meeting room will be open around 7:00 pm on September 8th, with the actual meeting starting at 7:30 pm.

You do not need to install any special app or software to use jitsi: you can use it via any modern webcam-enabled browser by going to the aforementioned link.

Thank you `MERLIN` *(the Manitoba Education Research and Learning Information Networks)* for providing the hosting and bandwidth for our meetings.

MUUG Needs You! Renew!

COVID-19 has hit many organizations and clubs quite hard. MUUG is no exception. If you're up for renewal, or your membership has lapsed, please make a point of renewing! We rely on membership dues to fund our ongoing expenses. In addition, member count provides a rough metric of the group's health and success. Without in-person meetings the group may seem quiet, but behind the scenes the board is always working on improvement and new features.

Give your board an *attaboy*: renew today!

No Postal Address Available Right Now

Due to COVID-19 restrictions, the MUUG postal address at the University of Manitoba is not available right now.

Please send all correspondence and membership renewals through e-mail to: board@muug.ca.

MUUG Has New Payment Options

You asked, and we answered! You can now pay your yearly MUUG dues via Interac e-transfer. One benefit of using e-transfer is MUUG will pay no fees – any potential fee will be paid on the payee's side at your bank/account's usual rate. Thanks to Treasurer Brad for doing the bulk of the bank wrestling required to enable this option.

In addition, thanks to a nice member who used the MUUG Square referral code, we have another few months of free Square usage. You can pay your dues with credit card via Square using this link:

https://manitoba-unix-user-group.square.site/

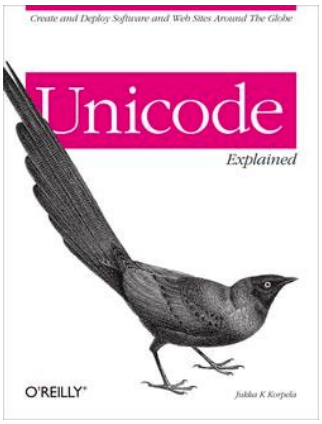
If you want to use Square for your own business, sign up using the following link and both MUUG and you will receive freebies and warm fuzzies:

https://squareup.com/i/MANITOBAU1

In addition, Paypal remains a great way to pay when you get your yearly renewal email – just click on the provided link.

However, due to COVID-19, and our postal address being down, please do not send cheques by mail. If none of the aforementioned electronic methods work for you, contact board@muug.ca and we'll work something out.

Door Prizes



Yes, door prizes are back! We're even giving away one highly sought-after dead-tree O'Reilly book this month: Unicode Explained.

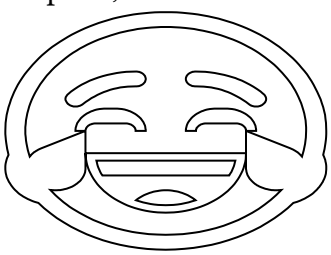
As usual we'll also have an assortment of e-books. E-books will be emailed, and the dead-tree book will be available for pick-up, drop-off, or snail-mailing.

Instructions on signing up for the door prizes will be provided at the beginning of the virtual meeting. Just look at the chat log window in Jitsi. If you arrive late, just scroll to the very top.

Unicode Explained is a thorough tome that covers everything character-setty and glyphy, but hardly in a jiffy. Confused what the difference between a character set and a character encoding is? Have no idea that Unicode and UTF-8 are different things? Manage a database or a web site? Wondering why your home page has some text that looks broken, like "Hi Ren°À!". Then you need this book!

Unicode In MySQL/MariaDB

In honour of this month's door prize, MUUG offers you a golden nugget of a tip: in MySQL, if you want Unicode (and you probably should for any modern web programming), always use the **utf8mb4** character set. The default used to be **utf8**, which is not the same thing. Newer versions default to **utf8mb4**, but your existing databases and tables will not automatically be upgraded.



Why is this important? MySQL's **utf8** definition was only 3-byte, and modern Unicode contains code points (characters) in the 4th plane (plane 3). It's not just obscure Chinese characters in the 4th plane either, there are many (semi-)commonly used symbols and emojis there.

It is simply unconscionable that your MySQL database can't contain the critically important 💩.

Luckily, it's fairly easy to convert between the different **utf8** character sets, though there are extra steps you must take both in MySQL and in your application to enter Character Utopia. If there is interest in a MUUG presentation on this topic, please let your friendly neighbourhood board member know!

Inotify Linux Journal

In one of the last Linux Journal (RIP) magazines was an article about **inotify** and why you should use it. Contained within was this wonderful quote:

> *In any event, it is productive to replace polling activity with inotify watches, and system administrators should be liberal in educating the user community that the classic crontab is not an appropriate place to check for new files. Recalcitrant users should be confined to Ultrix on a VAX until they develop sufficient appreciation for modern tools and approaches, which should result in more efficient Linux systems and happier administrators.*
>
> *– Charles Fisher*

Hat tip to Troy for the links in his **incron** article in a previous MUUGLines. Your editor has found great uses for **inotify** since first diving into it a few years back: truly a wonderful tool! Linux Journal's articles appear to be offline at the moment (or forever), but you can find the article online (or bits of it) if you search for some of the quoted text.

Why Is CSS Frustrating?

An interesting article by Robin Rendle speaks to a common complaint: that CSS can be frustrating and annoying. The upshot is, the problem is probably you!

Why? Because CSS is basically a programming language, yet often not really thought of as such. It requires a different thought paradigm. It's kind of like going from C to APL or Prolog: if you try to do Prolog like you do C, you'll fail. Read the article here:

https://css-tricks.com/why-is-css-frustrating/

AVIF: A Better JPEG?

Can humanity do better at image compression than the ubiquitous JPEG format? Netflix thinks so. They are pushing a new file format called AVIF: the AV1 Image File Format. In furtherance, they have open-sourced a framework to easily create images comparing the different image formats.

Anyone who has read the previously reviewed and recommended-by-MUUGLines High Performance Images (O'Reilly 2016) will know part of the story already. JPEG led to JPEG-XT and JPEG2000, Google proffered **webp**, and Apple got cozy with HEIF (from HEVC). Now Netflix wants us all to use AVIF.

If you get excited by subsampling, luma and jaggies, read the whole article at the link below. It contains some great sample images rendered in various file formats using their new tool. Compare the results for yourself and see what you think.

https://netflixtechblog.com/avif-for-next-generation-image-coding-b1d75675fe4

AMD Does a Random Doh

In this month's "funny CPU bug" instalment, we get a whopper from AMD. Some Ryzen 3000-series CPUs with unpatched BIOS microcode are returning slightly unrandom numbers when their "high-quality onboard random number generators" are used via fairly-new x86_64 instruction RDRAND.

How unrandom are the numbers? Oh, not too bad. It simply returns 0xFFFFFFFF every time, that's all. Even better, the CPU also sets the overflow bit that tells the caller that the CPU considers the value "sufficiently random". As one article puts it: it indicates "it has successfully created the most artisanal, organic high-quality random number possible".

If you purchased your Ryzen 3000-supporting motherboard after November 2019, or have updated your BIOS, you're probably safe from this bug. However, this oops is so egregious it deserves its own article for posterity. Oh ya, and great Dilbert article to boot:

https://arstechnica.com/gadgets/2019/10/how-a-months-old-amd-microcode-bug-destroyed-my-weekend/

Linux Game Review: Mr. Rescue

The vast community that is Linux (and *NIX, and open-source in general) sure produces a plethora of quality games. And you can't beat the fact that they are free and usually only a **dnf** or **apt-get** away.

This month we highlight a cute and addictive little 8-bit style platform action game called Mr. Rescue. You play a cartoonish firefighter whose job it is to run around three-levels of a building at a time and rescue all the children. To do this you are equipped with a fire extinguisher with an unlimited amount of water (the blue bar at the bottom). However, you can only blast a modest amount of it before you must allow for time for it to recharge.

But time is your enemy, as every few seconds your fire suit gets hotter (the red bar), and if it heats to maximum, you die and the game is over. Luckily there are "coolants" scattered around each level, and grabbing one of them lowers your suit temp a few notches. If you get near (or in!) fire, your suit temp rises quite rapidly.

While trying not to overheat, you have to knock down doors with your water blast, find all the children, and then pick them up one by one and throw them out a window to be rescued. Sounds easy, except a whole array of nasty, fiery baddies gets in your way. They heat up rooms, start new fires, and try to get to the kids before you do. Fortunately, you can blast them just as you can fires. Each one moves in a different manner, and you can learn the patterns of each one to avoid getting hit.

You'll quickly find it's not the fires or enemies that are the problem: it's the clock, in the form of the ever-hotter fire suit. Survive all the floors of one of the three mini-games, save most of the kids, and you get to fight the flaming boss on the rooftop.

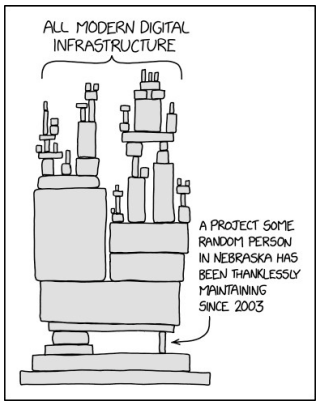
You can find this game in your distro package manager under a name like **mrrescue** (Fedora).

Help us promote this month's meeting, by putting this poster up on your workplace bulletin board or other suitable public message board:

https://muug.ca/meetings/MUUGmeeting.pdf

A big thanks to Les.net for providing MUUG with free hosting and all that bandwidth! Les.net (1996) Inc. is a local provider of VoIP, Internet and Data Centre services. Contact **sales@les.net** by email, or +1 (204) 944-0009 by phone.

XKCD: Dependency



https://xkcd.com/2347/

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