Why Linux?

Community Education

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Background

- Retired from USAF in 1987 and ManTech in 2017
- Have had a passion for computers since my days as a card-punching Algol- and Fortran-programming cadet at the U.S. Air Force Academy.
- After retirement from the USAF, I earned an MS in Engineering Mechanics from Clemson University, and have been employed otherwise as a vulnerability analyst, program manager, computer network system administrator for mixed Windows and Unix/Linux networks, and software engineer.

Background

- My interests include Raku (formerly known as Perl 6), PostScript, PDF, and C++ programming and the whole world of Linux and Free and Open Source Freeware in General.
- I am not a windows expert, but I am pretty computer savy
- Most of what I will say is opinionated, but based on many years of professional experience in the digital world

Hypothesis

- Young people interested in careers involved with science, mathematics, engineering, art, music, or almost any technical field should be introduced to **Linux**.
- Computers running Linux come loaded with powerful Free and Open Source Software (**FOSS**).
- If **a Linux** system is not available, they should still be introduced to **FOSS** on Windows or Mac computers.

What is Linux?

- More formally known as **GNU/Linux**, it's a free operating system (OS) invented by Linus Torvald to provide a UNIX-like system with all the standard command-line and graphics tools that accompany such a system.
- **Linux**, rather than Windows or Mac, provides much of the behind-the-scenes *cloud* computing in data centers and high-performance computing facilities. It (or forks of it) also powers the Android, the Chromebook, and much of the *Internet of Things*.

What is Linux? (cont.)

- For a much more detailed look at Linux compared to other OSs, see this link: <https://www.lifewire.com/operating-systems-2625912>

Why Linux?

- The commmand-line environment (equivalent to the *Power Shell* window on Windows) provides the user with almost complete freedom to automate tasks typical in research or other work in technical fields.
- **Linux** also gives the user much greater control over what happens and doesn't happen on his or her computer.
- As a bonus, **Linux** comes with thousands of free applications in categories like office suites, publishing, graphics, CAD, FEA, education, science, mathematics, music, art, and many others,

Linux vs. Windows: Windows

Windows:

- Is everywhere
- Is primarily a GUI operation
- Is expensive
- Hides internals
- **Has a non-case-sensitive file system**
- Updates are often awkward and difficult to control

Linux vs. Windows: Linux

Linux:

- Is the opposite of Windows in most respects
- Is everywhere, although it is usually working behind the scenes
- Is **FREE**
- Shows as much or as little of the internals as you want to see
- **Has a case-sensitive file system**
- **Performs upgrades only if you want it to**
- Is unparalleled for the scientist or engineer: a powerful, “programmable calculator

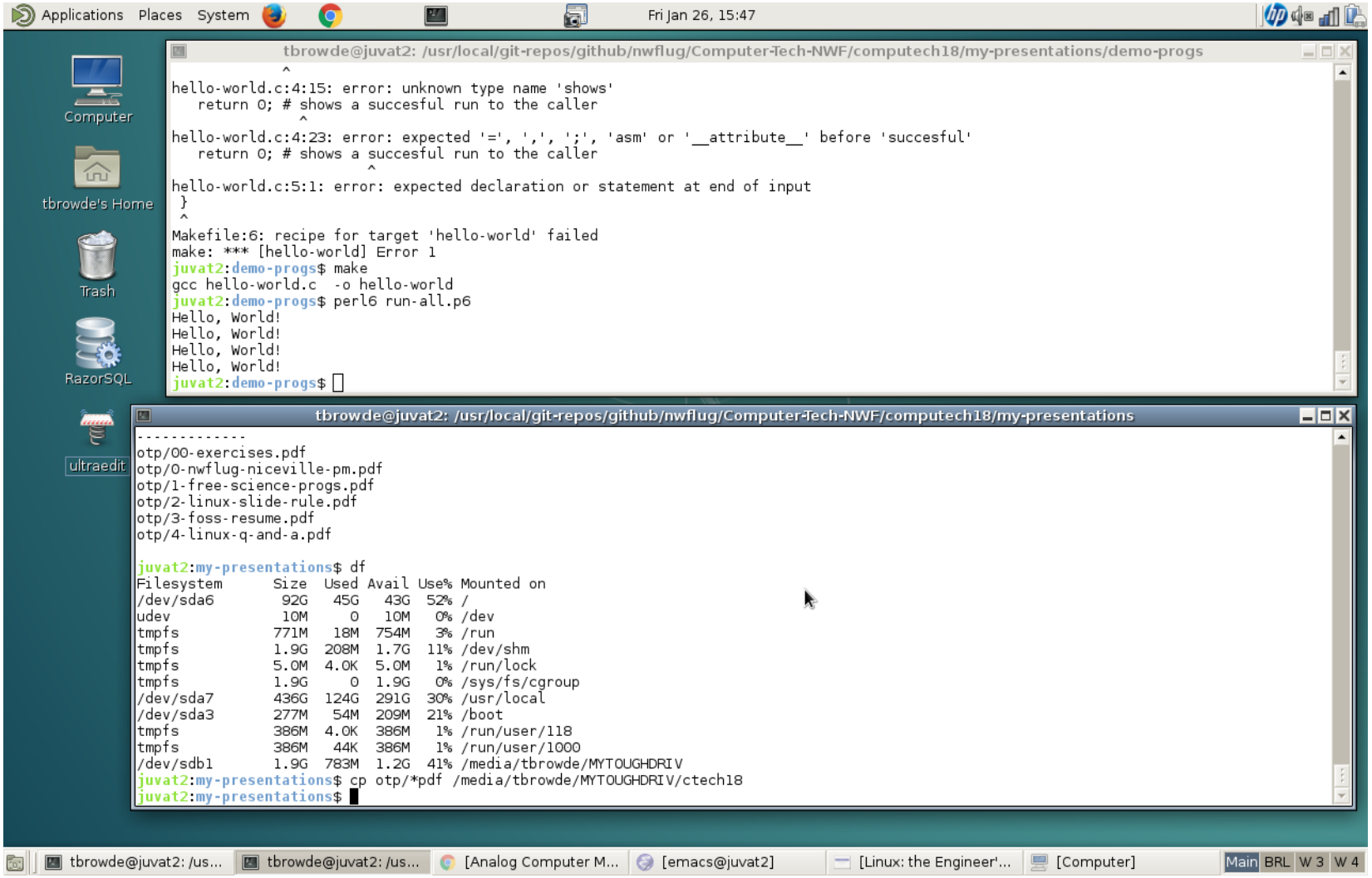
Linux vs. Windows: Other views

Other opinions:

- https://www.popsci.com/switch-to-linux-operating-system
- Https://www.makeuseof.com/tag/linux-beginners-guide

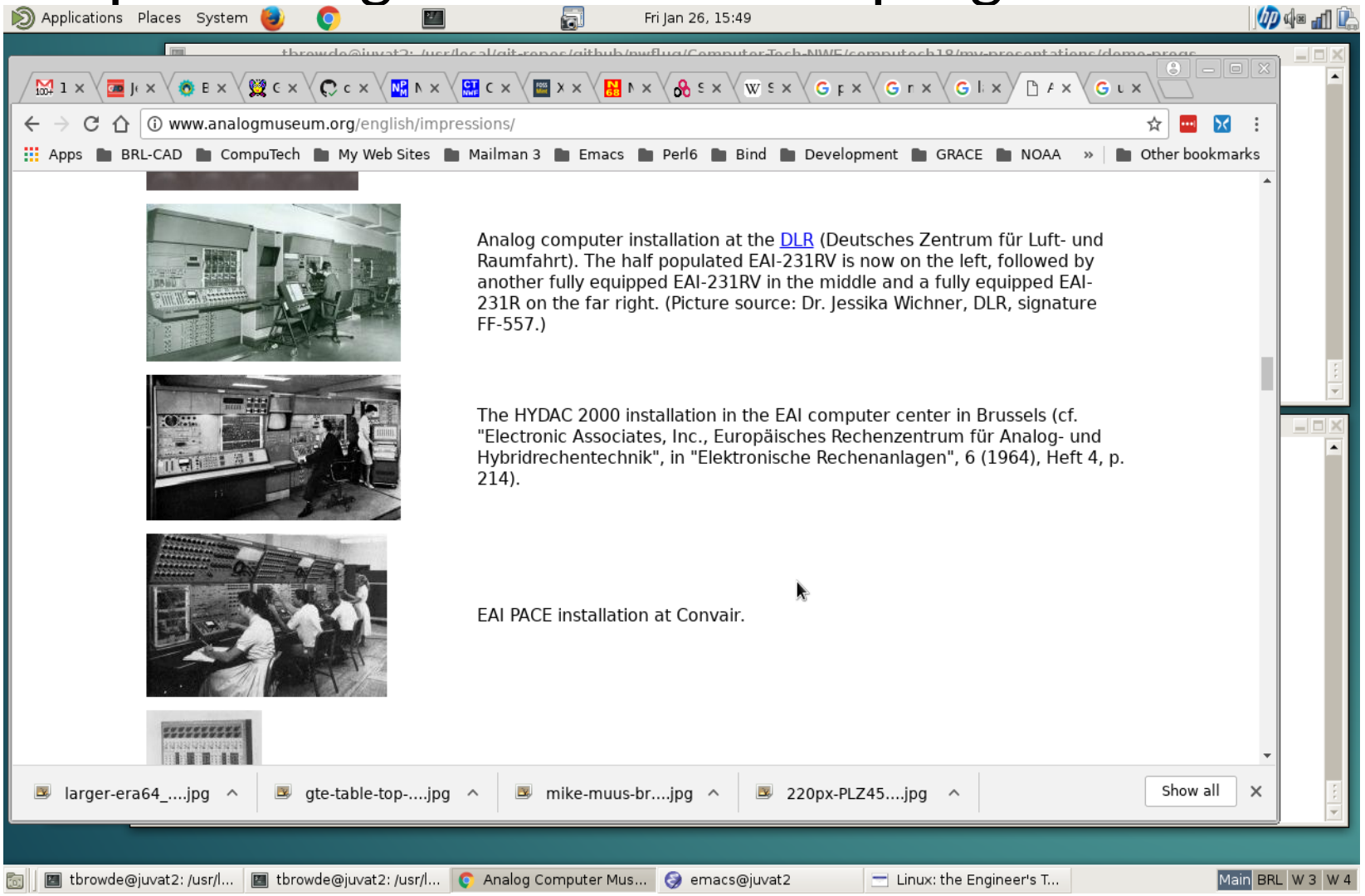
Linux: Introduction

Desktop empty while working at the command line



Linux: Introduction (cont.)

Desktop working with windowed programs…



Linux: How to get it

On Windows or Mac:

- Use a live, bootable USB [recommended for intro]
- Use Putty on Windows or a terminal app on an iPad to connect to a cloud server (as cheap as $2.50 per month)
- Install the Windows Ubuntu subsystem
- Install VirtualBox (free) to run a Linux Virtual Machine (VM)
- Use a live, bootable CD/DVD [only as a last resort]

Linux: How to get it (cont.)

On a Chromebook:

- Use its easy-to-access Linux app

Best choice

- Use a single OS, native installation
- Use a Chromebook

Linux comes in many flavors

A Linux system comes packaged in many distributions (distros) such as Debian (my choice), Ubuntu (most popular), Linux Mint, and many others

See <https://distrowatch.com> for lots of information about popularity, download statistics, and other stats on hundreds of **distros**.

Linux comes in many flavors (cont.)

My Linux friends think *Linux Mint* is one of the best *distros* for beginners. I prefer *Debian* and have used it for many years (starting with Debian 4 (code named *Etch*) released in 2007).

(Note that Google moved from Ubuntu-based Linux to Debian testing circa 2018.)

Linux help?

There is practically an infinite amount of Linux resources to be found on the Internet.

I am usually available to help small groups at a library, local church, Gulf Breeze Senior Center, or other public location.