

Introduction to Linux

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What is Linux, and why should I care about it?

- ▶ Linux is a family of Free Open Source Software (FOSS) operating systems which is widely used.
- ▶ Linux is particularly well-suited to academics, researchers, and software developers
- ▶ This presentation will introduce you to Linux, and will show you how you can use it to make your computing more enjoyable and productive

History - Unix

- ▶ The operating system Unix was developed at Bell Labs in the U.S.A. in the 1970s
- ▶ Very widely used, but proprietary
- ▶ Many tools (like the C language) were developed with and for Unix

History - GNU

- ▶ The GNU (GNU's not Unix) project was developed in the 1990s to produce a free version of Unix
- ▶ <https://www.gnu.org/>
- ▶ based on 4 freedoms:
 - (0) to run the program,
 - (1) to study and change the program in source code form,
 - (2) to redistribute exact copies, and
 - (3) to distribute modified versions.
- ▶ GNU produced most of the OS, and the tools including language compilers, but never completed the kernel, which controls the hardware

History - Linux Torvalds

- ▶ in 1991 Linus Torvalds, a Finnish teenager, started working on Linux, a FOSS unix-like kernel
- ▶ version 1.0 released in 1994
- ▶ Linux + GNU provides basis for many operating systems
- ▶ Linux development is sponsored by the Linux Foundation, a non-profit, which pays Linus to develop Linux
- ▶ Most of Linux is written by others, including programmers from large companies like IBM, Amazon, Red Hat and Microsoft
- ▶ Now the largest cooperative project in the world, and the largest codebase in the world.

History - today

- ▶ Linux is the most widely used operating system kernel in the world
- ▶ Most servers
 - ▶ Google
 - ▶ Amazon
 - ▶ Microsoft Azure cloud
- ▶ All supercomputers
- ▶ Android
- ▶ Chromebooks
- ▶ About 2% of desktop/laptops

- ▶ There are many different Linux distributions (“Distros”)
 - ▶ some are for primarily for servers (Red Hat, Debian)
 - ▶ some are for desktops (Ubuntu, Mint)
 - ▶ some are for experts (Arch, Gentoo)
- ▶ All versions can run the same applications
- ▶ Differences are in
 - ▶ how support is provided
 - ▶ how often the distro is upgraded
 - ▶ how software is installed
 - ▶ default software

Why should I use Linux?

- ▶ Many different reasons, but most come down to freedom and power
 - ▶ Four freedoms
 - ▶ Power results from these
- ▶ Linux was developed by its users, for their benefit
- ▶ **All** commercial operating systems (Windows, MacOS) were developed by corporations to benefit them, not you