Linux 101

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Some history - way back

- 1960
- Large single job machines, batch processing
- Operating system often only libraries to handle hardware.

BESK - KTH 1953, 512 word memory
also long time ago

PDP-10 - KTH 1970 ca, 256 Kiword memory

- 1970 - 1980
- Multiuser systems, minicomputers (very large)
- Time sharing, virtual memory, hard drives, ...
- Birth of Unix and C
before you were born

Mac or IBM PC?

- 1980 - 1990
- The personal computer.
- Manual switching between programs.
- MS-DOS, Mac OS, ..
The *nix war

- 1980 - 2000
- Unix flavors become the leading operating systems for everything but personal computers.
- Everyone wants a standard - their own.

AIX, HP-UX, Solaris, Ultrix ...
at the same time

Gnu is Not Unix

- 1983 -
- Providing a free (as in speech, not beer) operating system with everything you could need.
- Everything was in place ... the kernel will soon be ready.
Hello everybody out there using minix -

I'm doing a (free) operating system (just a hobby, won't be big and professional like gnu) for 386(486) AT clones. :

PS. Yes - it's free of any minix code, and it has a multi-threaded fs. It is NOT portable (uses 386 task switching etc), and it probably never will support anything other than AT-harddisks, as that's all I have :-(. 

- Linus Torvalds
Linux - the kernel for GNU

- 1993 -
- Linus Torvalds
- A monolithic system targeting the Intel 386 CPU.
- Linux was born and became the kernel for GNU.
The Unix Family

MULTICS MIT/GE/Bell Labs

UNIX AT&T (Bell Labs)

Mach, Carnegie Mellon

BSD Berkeley

SysV AT&T

GNU/Hurd

OS X, Apple

FreeBSD

NetBSD

Minix, Tanenbaum

GNU/Linux, Stallman/Torvalds

iOS, Apple

Orbis OS, Sony

Android, Google

.. left out a hundred other systems.
Even more

Figure: from www.levenez.com/unix/history.html
Monolithic vs Microkernel

One large monolithic kernel. Linux, BSD, MacOS, ...

A minimal kernel. Minix, Mach, L4 ... (Windows/NT)
GNU/Linux distributions

The kernel will not get you far, you will need: drivers, file system, network, security, codecs, window manager, compilers, browsers, office, games . . .

You can, but few do, download and compile exactly the components that you want . . . few people do that.

- **Debian**: the base for many - Ubuntu, Mint . . . most popular
- **Fedora**: used by Linus, Red Hat commercial version, CentOS . . .
- **Mandriva**: a.k.a Mandrake, Red Hat offspring, KDE, Intel only
- **openSUSE**: supported by Novell, second most popular distro
- **GenToo**: BSD like, professional users
- **Arch Linux**: for advanced users, Antergos, KaOS, Manjaro
- **Slackware**: you’ll learn a lot
Ubuntu

- Supported by Canonical
- Based on Debian packages.
- Two regular releases a year: 04 and 10
- LTS - five year support, released every second year
- Things work and are easy to maintain.
Which version of Ubuntu to choose is very much a choice of desktop environment.
Share of Top500 Super Computers
What’s next

[Images of R, HarmonyOS logos]
the elephant in the room
Three options:

- Install a *virtual machine* on top of your regular system.
- Take an old laptop and boot it from scratch.
- Join the good side.