

Linux @ UoR: What is it about?



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Outline



- 1 Introduction to Linux
- 2 My Experience
- 3 LUG @ the University of Reading
- 4 Resources

What is Linux?



- *Family of free and open-source software operating systems built around the Linux kernel* [Wikipedia]
- Kernel: Core of an operating system, controls particularly the hardware
- Ported across hardware platforms and embedded systems

Distribution

- Various vendors/institutions/groups packages
 - ▶ the Linux kernel
 - ▶ operating system
 - ▶ end user / application software (free and proprietary)
- Flavors: Ubuntu, Mint, SUSE, Red Hat, ...
- Come with a philosophy to manage system and software

The Linux kernel



- First Linux kernel release: September 17, 1991
- Available on <http://www.kernel.org>
- LOC: 20 Million!¹

Management

- Clear maintenance policies²
- Managed using the Git version control system
- Maintainers: 1308+ for different subsystems
- Sometimes rough discussions between developers

¹<https://www.linuxcounter.net/statistics/kernel>

²<https://github.com/torvalds/linux/blob/master/MAINTAINERS>

Free(dom) Software



Definition of the Free Software Foundation (FSF)

- *Software which may be used, copied, studied, modified and redistributed ("free as in free speech"), but is not necessarily available for no charge [Wikipedia]*
- Source code **must** be open
- Various licenses are permissive like GPL, MIT, and Creative Commons (CC)

Ecosystem of free software

- The GNU Project is a free-software mass-collaboration project
- Announced 1983 by Richard Stallman at MIT
- Aim: to give computer users freedom and control in their use of their computers and computing devices
- Collection of useful software tools
- Long time Linux was mentioned as: GNU/Linux

Why does Freedom Matter for Computer Scientists?



- Increases trust into software
 - ▶ Correctness
 - ▶ Privacy
- Gives us liberty to work with it
 - ▶ Patch bugs
 - ▶ Enhance functionality
 - ▶ Port it to other hardware
- Handle unwilling/bankrupt companies
 - ▶ Unlimited support for software

Relevance of Linux



Market Share

- Desktop < 2%
- Mobile 80% Android
- Embedded systems: most systems! (Windows < 8%)
- High-performance computing 99%
- Servers: widely used

Reasons for the use of GNU/Linux

- Linux + most distributions are free as in freedom and cost nothing
- Long term maintenance, 20 year old programs can still be used
- Maturity of code
- Flexible and capable to run on any hardware system
- Rich ecosystem

My Experience



History

- Around 1998: First experience with SUSE Linux
- 2001-2004: Tried to replace Windows, used dual boot
- 2005: Only used Linux, if really needed: Windows in a VM
 - ▶ Distributions: Debian, SUSE, Gentoo, Slackware, Ubuntu (now)

The Bad

- Sometimes time consuming when setting up new systems
 - ▶ Missing drivers (e.g., printers)
 - ▶ Unsupported hardware
- Sometimes annoying dealing with MS-world
 - ▶ Using proprietary formats like DOCX, ...
- Only fraction of PC games supported (cared when younger)

My Experience: The Good



- Became more capable computer scientist
 - ▶ Taking control of the system
 - ▶ Automation of literally all PC work that I dislike
 - ▶ Various programming languages + command line
 - ▶ Can resolve pretty much any hardware software issue
- High productivity
 - ▶ Professional letters, CV, presentations, ...
 - ▶ Higher focus on content instead of layout
 - ▶ Updates to a new Linux distribution: 1 hour: everything works
- Never lost any data since switching to Linux
 - ▶ Also no confusion with inaccessible file formats
- All software used is free and costs nothing
 - ▶ I do not miss a single program from MS-world, replacements are out there

Creation of this Slide Deck



- Linux distribution: Ubuntu 18.04
- LaTeX Beamer for text setting
 - ▶ Had to create a template mimicking PPTX template first
- Text editor: Atom
- Version management/backup: Git

LUG @ the University of Reading



Goals

- Supports individuals in
 - ▶ installation on (other) devices
 - ▶ questions regarding anything Linux related
- Discussing tools that empower people (other group?)
 - ▶ Data analysis
 - ▶ Creation of products, e.g., figures
 - ▶ Productive academic writing
- More Linux/free software usage at the University of Reading

Organizational Aspects



- Tight collaboration with “R.U. Hacking” society
- Establish monthly meetings (when?)
- Facebook page to inform about activities
- (Mailing list? Anyone in favor vs. Facebook?)

Useful Links



- Linux user group in Berkshire: <http://www.sclug.org.uk/>
- Running Linux inside a VirtualBox: <https://www.lifewire.com/run-ubuntu-within-windows-virtualbox-2202098>
- Linux distro discussion for beginners:
<https://itsfoss.com/best-linux-beginners/>
- Command line: <https://maker.pro/linux/tutorial/basic-linux-commands-for-beginners>