

Free Software and Open Source



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Agenda



- Who am I?
- History
- Wording matters
- Today - it's everywhere!
- Getting involved
- A personal perspective
- Philosophy and legal stuff

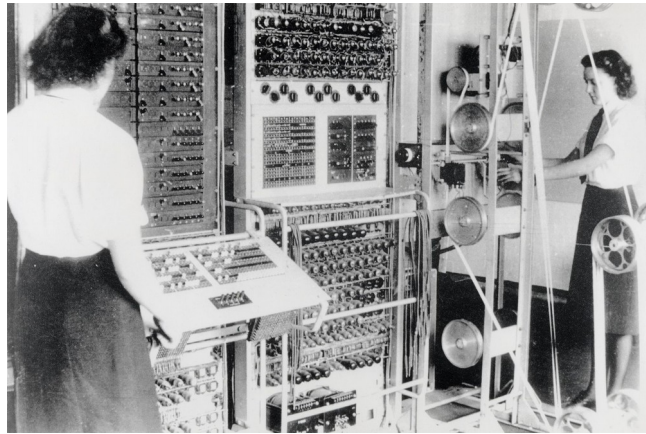
Who am I?



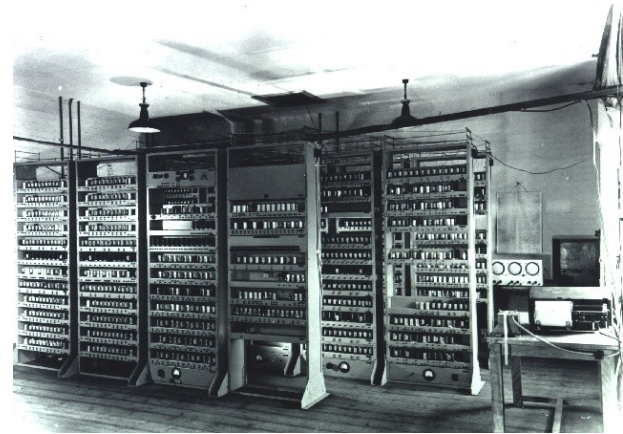
- Studied Engineering in Cambridge (1993-1997)
- Professional software engineer, employed by Arm in Cambridge
- Working on Open Source and Free Software since 1994
- Debian Developer since 1996, elected Project Leader 2008-2010
- Contributions to many other projects
 - Linux, glibc, toolchains, GRUB, audio, graphics, CD/DVD, test automation, networking, ...



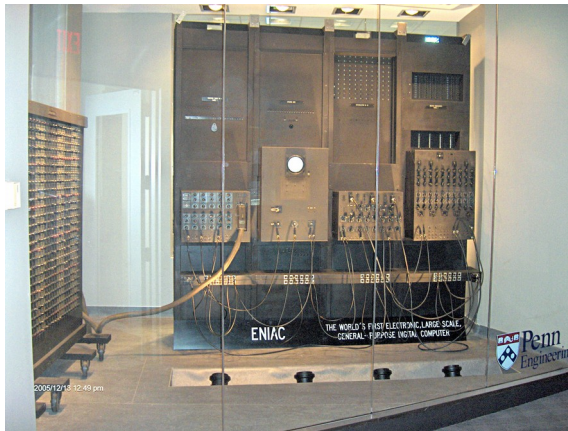
History of computing



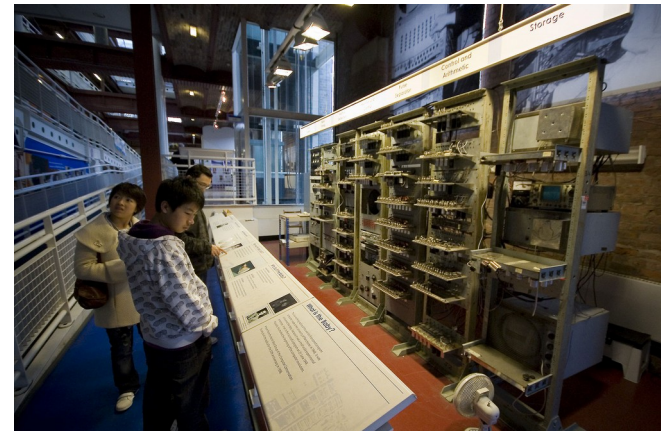
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History of computing



- Hardware is boring
- Software is what matters!
 - So let's concentrate on that...

1950s and 1960s



- Not many computers
 - Large, expensive
- Bought (rented!) by universities and large companies
- Software (and source code) included
 - Users could add features and fix bugs
 - Changes often shared with other users
- Software not considered subject to copyright

1970s



- Many more computers
- Rise of copyright and legal agreements
- New model
 - Binaries only, no source code
- Users expected to pay for fixes and updates
 - Very hard to do it themselves
- Famous “Open Letter to Hobbyists” from Bill Gates (1976)
 - Complained about people stealing software

1980s – Free Software



- Richard M Stallman
 - Researcher at MIT in the AI lab
- GNU project (1983)
 - “GNU’s Not Unix”
- Free Software Foundation (1985)
- Activism and politics
- Licensing became important
 - “Copyleft”, GPL v1 (1989)



All about freedom



- Four essential freedoms:
 - Freedom to run programs, for any purpose
 - Freedom to study how a program works, and modify it as desired
 - Clearly, this needs source code
 - Freedom to redistribute copies to others
 - Freedom to distribute modified versions to others
 - The whole community benefits from changes
- Continuing user freedom is key
 - Licences designed to enforce this

1990s – Open Source



- The Cathedral and the Bazaar (1997)
 - Influential essay/book by Eric S Raymond
- New concept of “Open Source”
 - Free Software, minus the social activism
 - More business-friendly
 - Emphasised process rather than Freedoms
- Open Source Initiative (1998)



Not Free, but Open?



- Emphasis on freedom alienating business?
- More pragmatic approach
 - Source sharing to improve development process
 - Collaboration between businesses and customers
 - Business case, not activism
- Open Source Definition
 - Guidelines to determine if a licence can be called Open Source
 - Much wider range of approved licences than FSF

Wording matters



- “Free”?
 - Free as in Freedom, not as in Beer!
- “Free” vs “Open”?
 - Different emphasis for different audience
- Lots of variations in terminology
 - Libre, F/OSS, FLOSS
- Don’t be distracted, but don’t be suckered
 - Deliberately confusing terms like “Shared Source” or “Community Licence”

Today – it's everywhere!



- Many billions of computers
- Free Software / Open Source on most
 - Embedded devices and IoT
 - Phones
 - Desktops
 - Servers
 - Supercomputers
 - Cloud
 - In space!



Visible or not?

- Kernels
 - Linux, BSD, Zephyr, ...
- Core libraries
 - Multimedia, compression, cryptography, ...
- Languages
 - Python, Perl, PHP, Ruby, Java, Rust, Go, ...
- Complete operating systems
 - Debian, Red Hat, Ubuntu, ...

Who's involved?



- Software companies
 - Amazon, Apple, Facebook, Google, Microsoft, ...
- Hardware companies
 - Arm*, Intel, Dell, Samsung, Sony, ...
- Other companies big and small
 - Netflix, BMW, Sky, Disney, Cisco, ...
- Governments
- Universities and students
- Hobbyists of all ages

You?



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Why do FLOSS?



- It's **fun**
 - Work on whatever you like, at your own pace
 - Writing new stuff, sharing it with others
 - Make new friends all over the world
- Because you **can**
 - Don't like how something works? Found a bug?
 - Go and make the changes you want
- You can help to **improve the world**
 - Everybody can benefit from your changes

Why do FLOSS? (2)



- It's a great way to **learn**
 - Learn from other people's code directly
 - Collaborate directly with real experts
- It's a good way to **make a name**
 - Look beyond the CV
 - Many employers ask to see code
 - Show that you're already the expert they need!

How to get involved?



- Look at software you're already using
 - Found a bug? Get stuck in!
 - Help to diagnose the problem, help to fix it
- Find a project that sounds interesting
 - All sorts of things out there
- Scratch an itch
 - Write something that you want/need
 - Share it with the world
 - Borrow and improve, share the changes

Joining a community



- Join the mailing list / forum / IRC / Slack
- Recommendation: listen for a while first!
 - See how things are done
 - Learn who's doing the work
 - Look for answers before asking questions
- Most projects are short of effort
 - Always more work to do than people to do it
 - Offer to help testing and reviewing if you can
 - Play with the code and see how things work

A personal perspective



- My own history:
 - Spent more time at college learning about Linux and FLOSS than Engineering!
 - Worked on an audio program, learnt **loads**, got into Debian
 - Found my first job as a developer because of it
 - Travelled the world making Debian friends
 - Worked on lots of different technologies in Debian
 - Later jobs all came from that varied background
 - Now in Arm's OSS group: hundreds of engineers

Philosophy and legal stuff



- Licensing is *boring*
 - But it does matter
- Very easy to get it wrong
 - **Don't** make your own licence!
 - Lots of licences to choose from already
 - **Don't** try to be clever
 - People do this and get it wrong all the time :-)
 - Licences are not the place for jokes
- **Not** picking a licence is not an option!



Licence choices

- Two major groups, split by philosophy
 - Copyleft
 - GPL, LGPL, AGPL, GFDL, ...
 - Designed to enforce future freedom
 - “Permissive”
 - BSD, X11, MIT/Expat, Apache, MPL, ...
 - Users not required to pass freedoms on
- Public Domain is **not** a licence
 - Modern collaboration is global, consider all jurisdictions

Working with an existing project



- Check the existing licence
- Contribute under the same licence
- Possible copyright assignment
 - Some projects require this, but many don't
 - Allows a project to keep consistent ownership
- Check that licences are compatible
 - Where necessary
 - Too easy to get this wrong :-)



Summary

- Open Source and Free Software are a major, growing force in the software world
- Licencing is important
 - But don't get hung up about it!
- You can get involved too
 - Make a difference
 - Have fun!

Thanks!



- Dr Fox & University of Lincoln
- My employer Arm
 - We're hiring! arm.com/careers

Questions?



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