



Operating Systems

In a Nutshell

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Week 01

About

What Is This Thing?



- A module about operating systems, i.e., the piece of software that carries all the hard work of:
 - communicating with the machine on our behalf;
 - communicating with other pieces of software on our behalf;
 - cleaning up our mess (on our behalf);
 - in general, doing almost everything on any device we daily interact with.
- A module, eventually, about LINUX.

What Linux?



- Linux should be installed on all lab machines – at least as Virtual Machines.
 - We can, however, go through the installation process together, since you should also install some Linux distribution at home.
- Prefer something simple and user friendly, such as Debian, Ubuntu, Mint, etc.
 - Or Arch, if you really feel like going for it.
- You might also want to prepare and work from your own live usb – most Linux distributions support this.
 - Maybe speed is an issue.
 - Also, this might make things a bit tricky when working with multithreading.

Assessment



Four equally graded assignments (25% each):

- **Coursework 1 (25%):** A report (~5000 words) and demonstration of basic and slightly advanced Linux programming. Due: TBA, probably Week 08.
- **Coursework 2 (25%):** A report (~5000 words) and demonstration of basic and slightly advanced Linux IPC. Due: TBA, probably Week 13.
- **Coursework 3 (25%):** A report (~5000 words) and demonstration of basic and slightly advanced Linear Algebra / FORTRAN coding. Due: TBA, probably Week 19-20.
- **Coursework 4 (25%):** Implementation and build of a miniscule (or not) Linux kernel part + report. Due: TBA, probably Week 25-26.

This Semester



This semester we wil:

- learn about how operating systems work, in general, and apply those concepts on the best operating systems on this planet;
- learn how to program Linux using bash commands and scripts;
- take a deep dive into C and, in particular, Linux system calls using C;
- have plenty of fun (?) with concurrency, parallelism, threads, and all that stuff on Linux.

In a nutshell: have fun!

Have (Linux) Fun!