

## Introduction

This first double lecture introduces the course (*Course information*) and gets you started on the first 2 topics namely OSs (*Intro to OSs*) and makefiles (*Programming in Linux*). What to read and relevant questions for each part can be found in the following sections.

## Content and reflection

### I3ISU Introduction

#### Themes

- Course information[1][5]  
*Overview, material and expectations*
- Studying[7]  
*Reading and understanding large texts*

#### Questions

- What is required in terms of exercises - labs and reviews
- When writing a review, which elements have to be present and to what extend
- Where do I get a *Raspberry Pi Zero Wifi* and where do I get information about it
- Where do I find the material for this course
- How do I study efficiently (not covered in the lecture per se - but considered a must!)

### Intro to OSs

#### Themes

- OS[6, chap. 1-4.4][2]  
*Covers*
  - What is an OS
  - Kernel (and types)
  - Processes
  - Memory
  - I/O
  - Real-Time OS

#### Questions

- Grasp the different major concepts that make up an OS
- Which different OS categories do you believe exists
- What is a process and from where does it come from
- What is *protection* or *sandbox* in relation to a process

- What happens in Userspace and/or in Kernelspace
- Can a process have multiple threads?

## Programming in Linux

### Themes

- From source to executable[8][3][4][13, chap. 3-3.4]
- Makefiles[8, sec 1-1.11][4][9, chap. 5-5.4] ([10])  
*As an optional - see the makefile fundamentals video[10]*
- Quick reference for makefiles[11]  
*E.g. The quick reference material is mostly for getting an overview and in helping completing the assignment.*
- Shell scripting[12]

### Questions

- Which two processes are involved in generating an executable based on some sources. E.g. what do each of them do?
- What is the purpose of using makefiles
- Describe the 3 main terms
  - target (or goal)<sup>1</sup>
  - pre-requisites/dependencies
  - recipe
- Variables
  - What are used for in this context
  - How do you denote a variable
- Why do you need *.PHONY* on occasion?
- If I want to add the contents of one **makefile** into another, how is that accomplished?

## Material

### Slides

- [1] S. Hansen, *Introduction to i3isu*, Slides - see course repos.
- [2] —, *Intro to oss*, Slides - see course repos.
- [3] —, *C++ programming in linux - target*, Slides - see course repos.
- [4] —, *C++ programming in linux*, Slides - see course repos.

<sup>1</sup>If in doubt - read the literature or take a look at the slides.

### Local repository

- [5] S. Hansen, *Guide to the use of a wiki in i3isu*, Guide, See repos <https://redmine-server.ase.au.dk/courses/projects/i3isu/repository>.
- [6] R. B. Muhammed, *Introduction to operating systems*, TFJ composed a pdf based on the text from: <http://www.personal.kent.edu/~%7ermuhamma/OpSystems/os.html>.

### Online

- [7] Studiemetro. (2013). Aktiv akademisk læsning. Danish, [Online]. Available: <https://www.youtube.com/watch?v=WTu2-HSw50w>.
- [8] Maemo.org. (2014). Gnu make and makefiles, [Online]. Available: [http://wiki.maemo.org/Documentation/Maemo\\_5\\_Developer\\_Guide/GNU\\_Build\\_System](http://wiki.maemo.org/Documentation/Maemo_5_Developer_Guide/GNU_Build_System).
- [9] P. D. S. Richard M. Stallman Roland McGrath. (2014). Gnu make, [Online]. Available: <https://www.gnu.org/software/make/manual/make.pdf>.
- [10] P. Programming. (2015). How to create a simple makefile - introduction to makefiles, [Online]. Available: [https://www.youtube.com/watch?v=\\_r7i5X0rXJk](https://www.youtube.com/watch?v=_r7i5X0rXJk).
- [11] e. a. Richard M. Stallman. (). Makefile - quick reference, [Online]. Available: [https://www.gnu.org/software/make/manual/html\\_node/Quick-Reference.html](https://www.gnu.org/software/make/manual/html_node/Quick-Reference.html).
- [12] A. J. Mills. (). Unix shell scripting tutorial, [Online]. Available: <https://supportweb.cs.bham.ac.uk/documentation/tutorials/docsystem/build/tutorials/unixscripting/unixscripting.pdf>.

### Hardback

- [13] M. Kerrisk, *The Linux Programming Interface*. No Starch Press, Inc, 2010, ISBN: 978-1-59327-220-3.