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OS 1 – Intro

The lecture is based on the work and the documents of Prof. Dr. Ludwig Frank

OS tasks

Which operating systems do you know?

OS tasks

What are the tasks of an operating system?

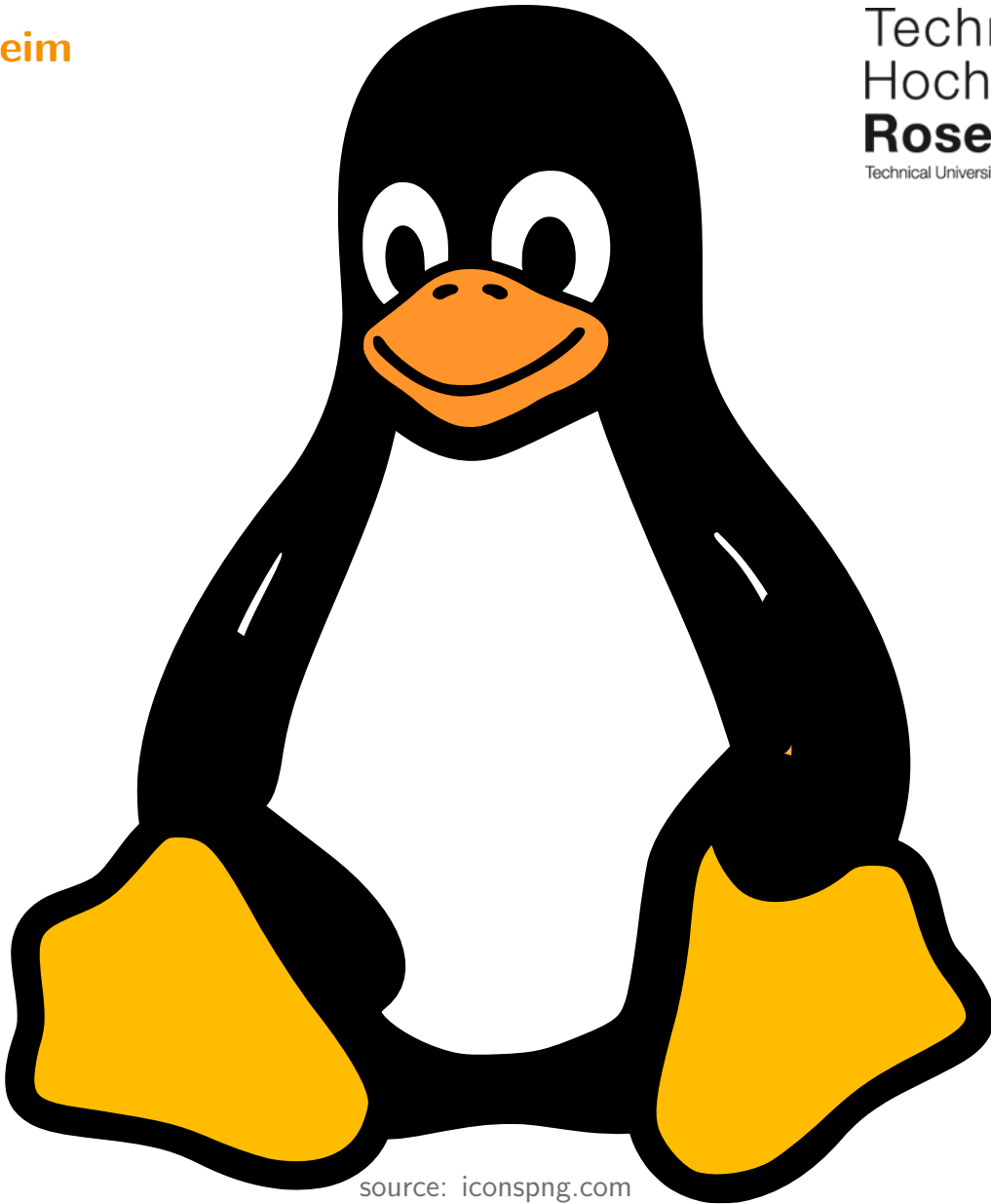
OS

Poll 1: OS lecture

OS

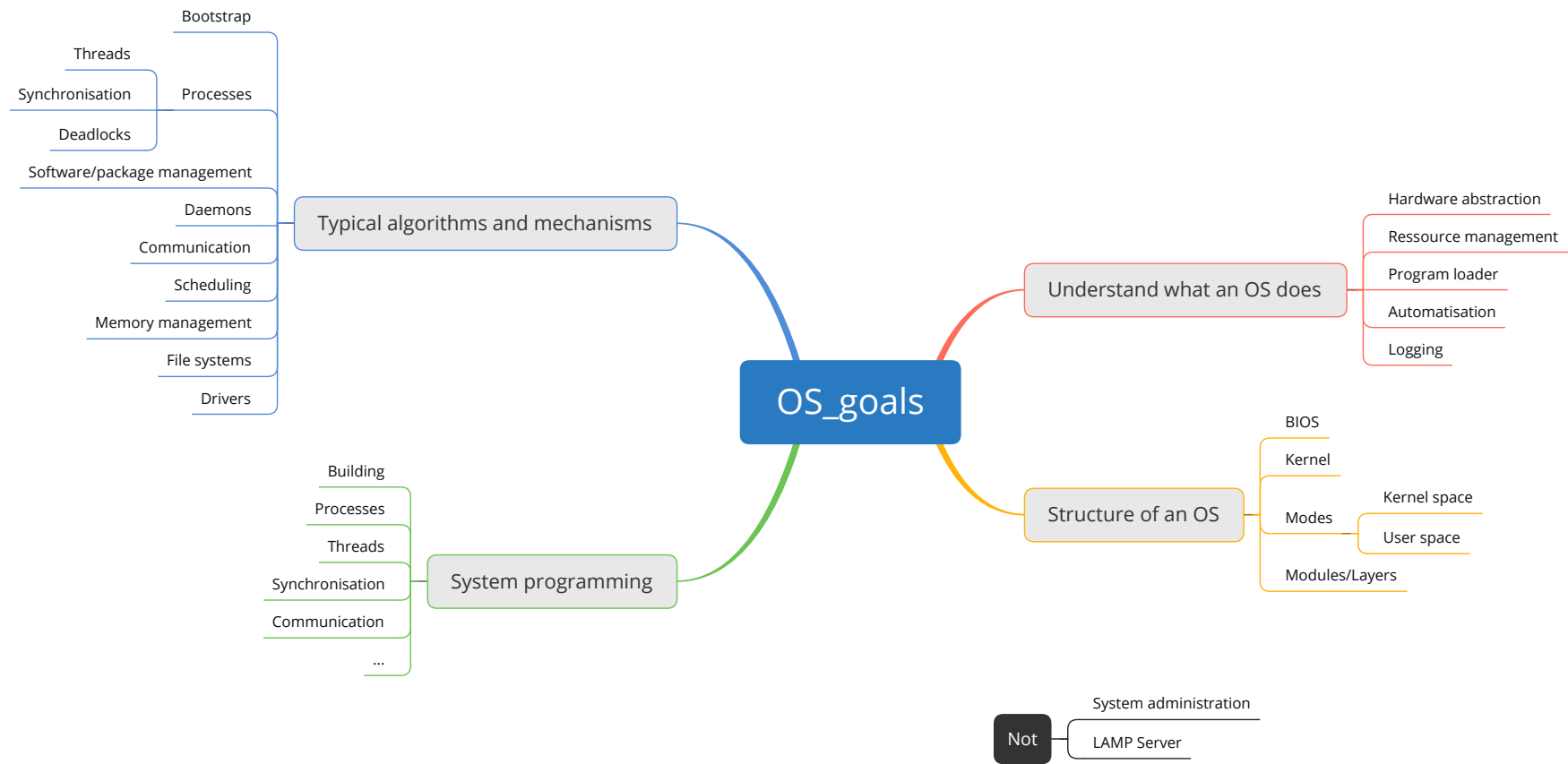
Poll 2: Which OS do you primarily use?

OS



source: iconspng.com

Goal



SPO

SPO 2012 vs SPO 2018

SPO = Studienprüfungsordnung

Material

Material for lecture and exercises:

`https://inf-git.th-rosenheim.de/Lectures/OS_exercises`

Contact tracing

We have to perform **contact tracing**: see Learning Campus!

<https://learning-campus.th-rosenheim.de/course/view.php?id=4729#section-1>



Time and date

Event	Day	Time	Room
Lecture	Tuesday	08:00 - 09:30 o'clock	R0.04
Exercise group 1	Monday	08:00 - 09:30 o'clock	B0.08a
Exercise group 2	Monday	09:45 - 11:15 o'clock	B0.08a
Exercise group 3	Monday	11:45 - 13:15 o'clock	B0.08a

Lecture

- Presentation of concepts
- Discussion of concepts
- Mostly an introduction into concepts
- Live coding

Best learning experience: **discuss with me!**

Exercises

Exercise content:

- Shell scripting (bash)
- Linux system programming with C
- Theoretical tasks
- **Homework is also necessary!!!**

Equipment:

- Everyone needs a PC (notebook) with a virtual machine (VirtualBox or VMware)
- There are some notebooks to borrow (up to 9)

Exercises

Group choice

Exercises

Everyone has to setup the VM in the first exercise!
Next time, we need a running environment.

- We try to run the VM locally, where possible.
- If it doesn't run within the exercise, we support you personally at the university.
- If it will not run, we provide you a virtual machine hosted at the VMware Horizon infrastructure of the university.

Exam

Usually:

- Type: written examination
- Duration: 90 minutes

Please **visit** the **exercises**, this is one key to successfully pass the exam.

Linux shell

The shell (terminal) is a

- command line **interpreter** and a
- **interface** to the Linux **kernel**

We use the **bash** as the main shell (terminal).

Linux prompt

```
flo@flo-nbw_/_data/repos/repos_fh/OS.git$
```

Linux shell 101

A short Linux shell (bash) introduction...

- **Directories:** show, change, create, remove
- **Files:** create, show, move, remove
- **Commands:** man (help), execute, execute as root (sudo)

Linux shell 101 - directories

```

1  ls                #list directory content
2  ls -l            #list directory content - show details
3
4  cd ..            #change to parent directory (relative)
5  cd sub1          #change to sub directory (relative)
6  cd /var/log      #change to directory (absolute)
7
8  #paths:
9  #relative:      file
10 #               ./file
11 #               ../file
12 #absolute:      /path/to/file
13
14 mkdir newdir     #create directory
15 rm -r sub1       #removes sub1 directory (recursive)

```

Linux shell 101 - files

```
1 cat file           #shows the content of file
2 tail file          #shows the last 10 lines of file
3 tail -f file       #shows the last 10 lines of file and follow the lin
4
5 touch file         #creates an empty file
6
7 rm file            #removes file
8 mv file file2      #renames file to file2
9 mv file sub/       #moves file to the sub/ directory
```

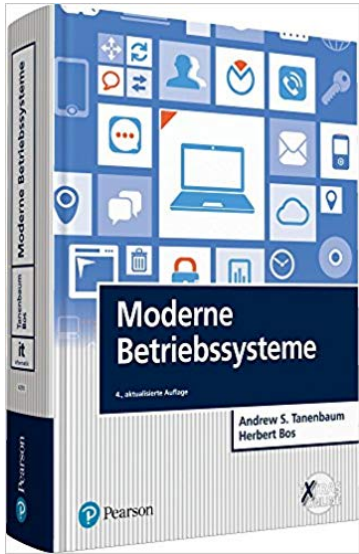
Linux shell 101 - commands

```
1 <command> -h           #inline help for command
2 <command> --help        #inline help for command
3 man <command>          #manpage (Handbuch) command
4
5 <command>               #executes command that is known by Linux
6 ./<command>             #executes a command in the current folder
7
8 sudo <command>          #executes command with root rights
```

Literature (1) - Betriebssysteme

Moderne Betriebssysteme

Author(s) Andrew S. Tanenbaum, Herbert Bos
Date 03. Mai 2016
Edition 4. edition
Language German
ISBN 978-3868942705
Reference [1]



[source: amazon.de]

Literature (2) - Linux shell

Bash Reference Manual

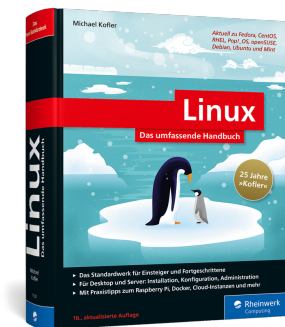
Author(s)	GNU
Date	20. May 2019
Language	English
Reference	[2]
Link	https://www.gnu.org/software/bash/manual/

Literature (3) - Linux shell

Linux: Das umfassende Handbuch

Für alle aktuellen Distributionen (Desktop und Server)

Author(s) Michael Kofler
Date 25. Oktober 2019
Edition 16. edition
Language German
ISBN 978-3836271318
Reference [3]
Link <http://openbook.rheinwerk-verlag.de/linux/index.html>



[source: <https://www.rheinwerk-verlag.de/linux-das-umfassende-handbuch/>]

Literature (4) - Linux shell

Ubuntuusers Befehlsübersicht

Author(s)	Ubuntuusers
Language	German
Reference	[4]
Link	https://wiki.ubuntuusers.de/Shell/Befehlsübersicht/

Summary and outlook

Summary

- OS tasks
- Linux shell intro
- Linux prompt
- Linux shell 101

Outlook

- Build on command line
- ELF
- Makefile
- Autotools