



LINUX BASICS

Internship
Spring 2025

Meet the speaker



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Agenda

- 01 Operating systems
- 02 Linux system architecture
- 03 Linux file system
- 04 Package managers
- 05 Processes in Linux
- 06 User management
- 07 Terminal/ssh/scp
- 08 Command for learning commands
- 09 Moving through file tree
- 10 Working with files
- 11 Working with file content



AGENDA

- OPERATING SYSTEMS
- LINUX SYSTEM ARCHITECTURE
- LINUX FILE SYSTEM
- PACKAGE MANAGERS

PROCESSES IN LINUX

USER MANAGEMENT

TERMINAL/SSH/SCP

COMMAND FOR LEARNING COMMANDS

MOVING THROUGH FILE TREE

WORKING WITH FILES

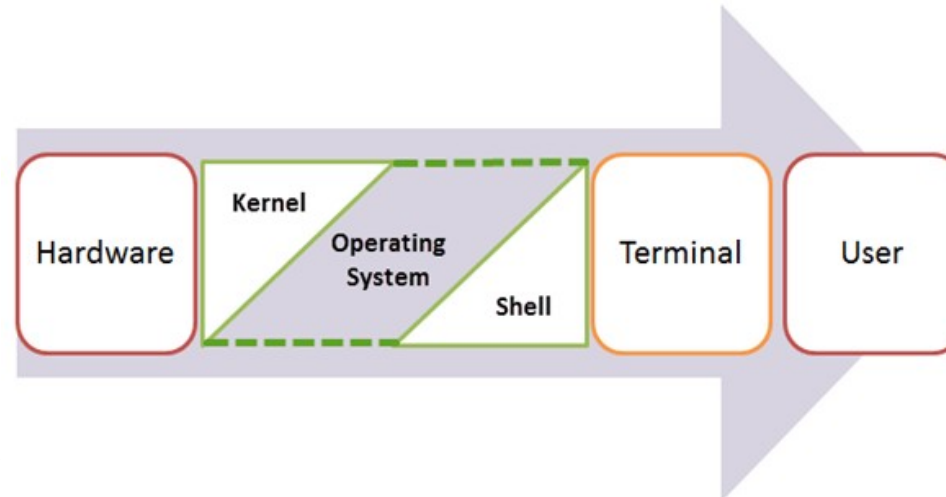
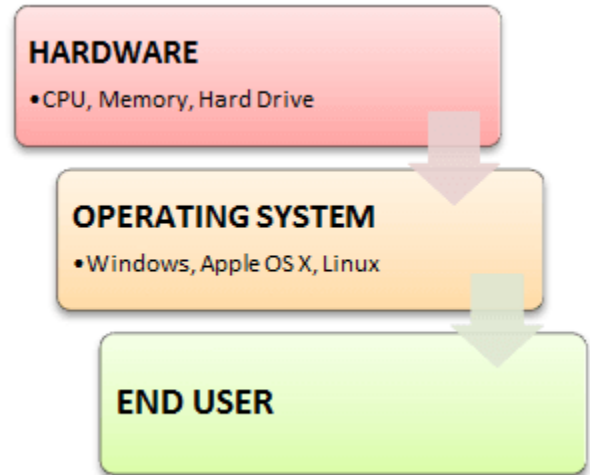
WORKING WITH FILE CONTENT



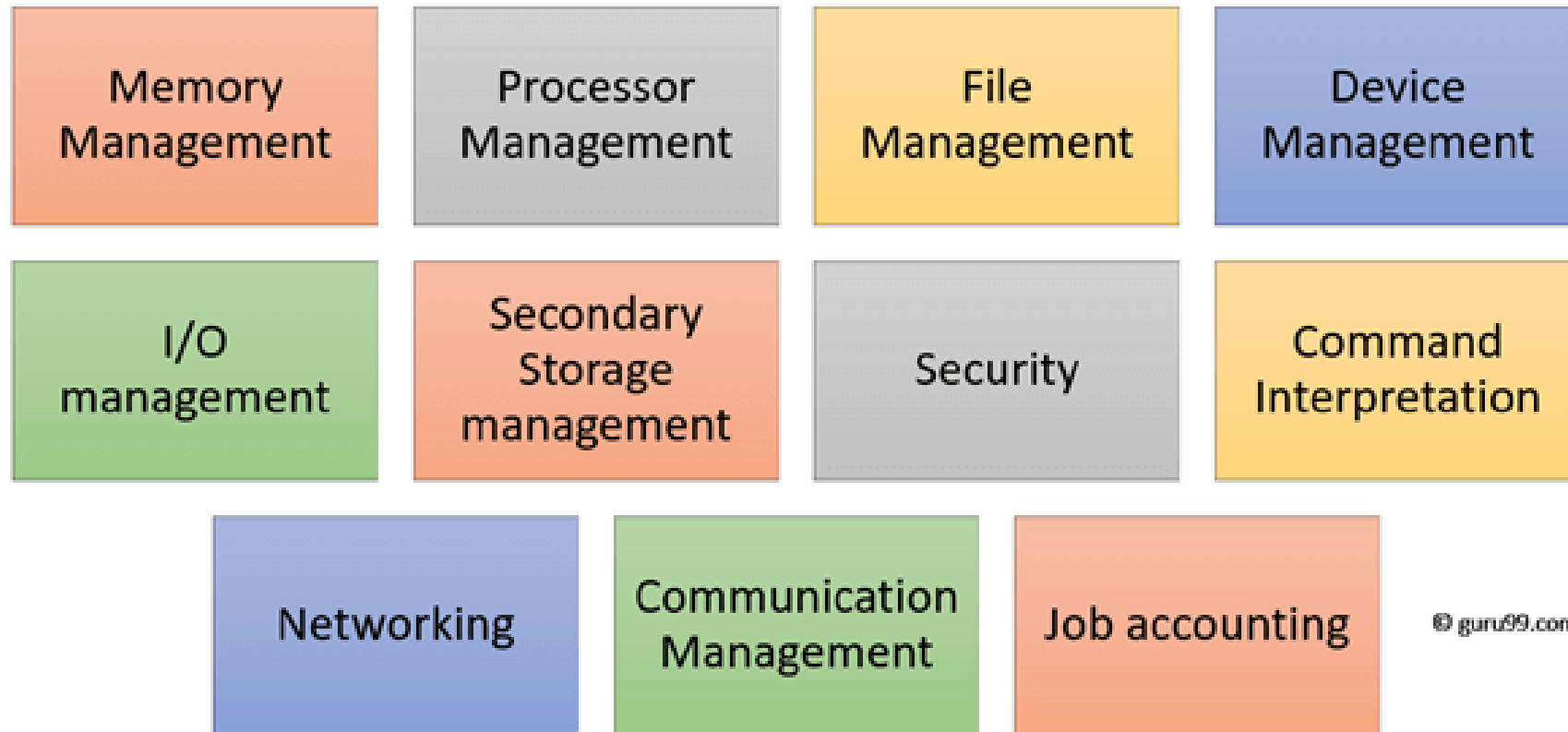
OPERATING SYSTEMS

FEATURES OF OPERATING SYSTEM

- PROTECTED AND SUPERVISOR MODE
- ALLOWS DISK ACCESS AND FILE SYSTEMS DEVICE DRIVERS NETWORKING SECURITY
- PROGRAM EXECUTION
- MEMORY MANAGEMENT VIRTUAL MEMORY MULTITASKING
- HANDLING I/O OPERATIONS
- MANIPULATION OF THE FILE SYSTEM
- ERROR DETECTION AND HANDLING
- RESOURCE ALLOCATION
- INFORMATION AND RESOURCE PROTECTION



FUNCTIONS OF AN OPERATING SYSTEM

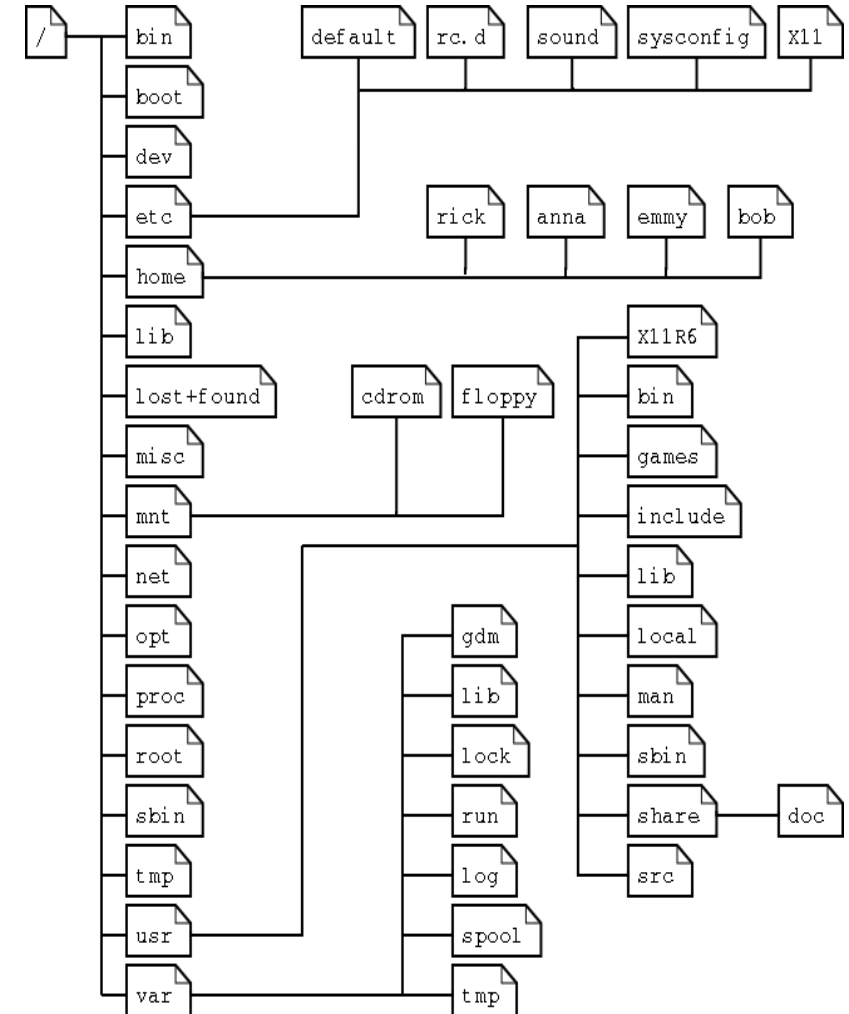


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LINUX FILE SYSTEM

MAIN FOLDERS

- / - root folder for fs
- /boot – bootable files
- /bin – common programs
- /dev – references to the devices
- /etc - configs
- /home – users home folders
- /lib – kernel modules
- /mnt – standard mount point
- /proc – system resources info
- /opt – 3rd party and extra software
- /root – home folder for root user
- /run - processes
- /usr – user`s program
- /var – variables and temporary data
- /sys – system information
- /sbin – system binaries



PACKAGE MANAGERS

PACKAGE TYPES

Package tools:

rpm – Debian, Mint, Ubuntu
dpkg/deb – APT, Synaptic

Package managers:

yum - RedHat, Fedora, SUSE
apt - Debian, Ubuntu
pacman, yaourt - Arch

Source-based – Slackware, Gentoo

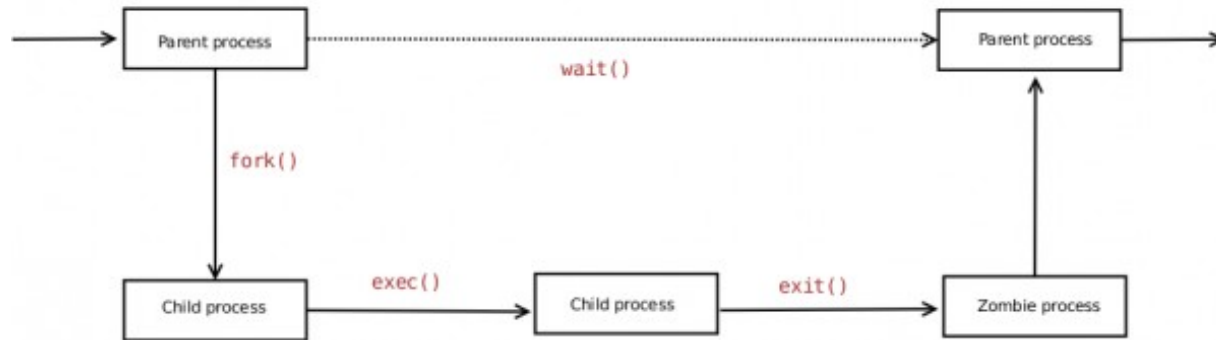
WORKING WITH PACKAGES

```
apt-get update -  
apt-get upgrade  
apt-get install <app name>  
apt-cache search <package name>  
apt-cache showpkg <package name>
```



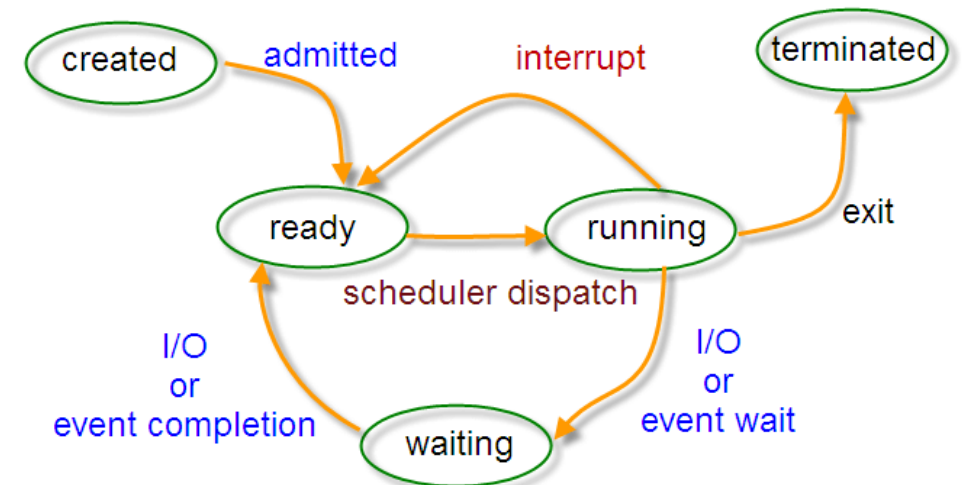
PROCESSES

Linux Processes Life Cycle



- **Running** – it is the current process in the system.
- **Waiting** – in this state, a process is waiting for an event to occur or for a system resource.
- **Stopped** – in this state, a process has been stopped, usually by receiving a signal.
- **Zombie** – here, a process is dead, it has been halted but it's still has an entry in the process table.

Process State



USER MANAGEMENT

READ =100

WRITE =010

EXECUTE=001

Command	Description
<code>sudo adduser username</code>	Adds a user
<code>sudo passwd -l 'username'</code>	Disable a user
<code>sudo userdel -r 'username'</code>	Delete a user
<code>sudo usermod -a -G GROUPNAME USERNAME</code>	Add user a to a usergroup
<code>sudo deluser USER GROUPNAME</code>	Remove user from a user group
<code>whoami</code>	prints your user name
<code>chown <username>:<groupname></code>	Change file owner and group

COMMAND FOR LEARNING COMMANDS

- **MAN**, I DON'T KNOW A COMMAND <ABC>

- JUST ASK **MAN**, DUDE

man == manual pages

man <command> - manual about <command>

man <config.file> - manual about <config.file>

man <daemon> - manual about <daemon>

I DON'T WANNA **READ TO MUCH**

whatis – shows the first line of manual

whereis – the location of manual page

info – just like man but in the info format

MOVING THROUGH FILE TREE

LETS WALK

`pwd` – Print Working Directory

`cd` – Change Directory

`ls` - LiSt

`mkdir` – MaKe DIRectory

I'M JUST TO TIRED TO TYPE ALL OF THESE LETTERS

Use Tab key for autocomplete !!!!!

And about absolute and relative paths

And remember shortcuts!!

`/.../.../....` - Absolute path

`.` – current directory

`.../.../...` – Relative path.

`..` – a parent directory

`~` - home directory

WORKING WITH FILES

REMEMBER NEXT RULES

Case sensitivity !

Everything is a file !

SO WHAT CAN WE DO WITH FILES?!

`file` – determines the file type

`touch` – create an empty file

`rm` – ReMove file

`cp` – CoPy file

`mv` – MoVe. Or Rename))

`rename` – Rename multiple files according to the regexp

WORKING WITH FILE CONTENT

OK. SO WHAT`S NEXT ?

head – show the first 10 lines of file

tail – show the last 10 lines of file

cat – an universal tool to work with files

tac – an opposite for cat command

more / less – prints file on screen

strings – prints readable strings from (binary) files

nano – simple text editor

emacs – powerful and customizable text editor

vi / vim – most powerful text editor you`ve ever seen ;)

PROCESSES IN LINUX

WHAT IS USING MY CPU ?!

ps – Process Status

ps -ef / ps aux – see every process

ps axjf – build a process tree

ps o pid,user,command

top/htop/atop – list of all working processes

WELL... I NEED TO KILL SOMETHING

kill – kill the process

kill <pid> - try to kill a process

kill -9 <pid> - kill a process with SIGTERM

kill -<signal> <pid>

```
1 [|||||] 16.4% Tasks: 80, 168 thr; 2 running
2 [||] 4.0% Load average: 1.17 2.31 2.42
3 [||] 2.7% Uptime: 1 day, 05:11:34
Mem[|||||] 1007/7479MB
Swp[ ] 0/8099MB
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
16499	joe	20	0	1904M	325M	73396	S	13.7	4.4	3:26.71	cinnamon --replace
16157	root	20	0	305M	74336	37616	S	3.9	1.0	16:52.70	/usr/bin/X :0 -audi
18419	joe	20	0	25784	3516	2888	R	1.3	0.0	0:00.35	htop
17369	joe	20	0	581M	27724	21680	S	1.3	0.4	0:13.16	gnome-terminal
17391	joe	20	0	1363M	291M	47740	S	0.7	3.9	1h11:10	simplescreenrecorde
18077	joe	20	0	1363M	291M	47740	S	0.7	3.9	2:12.44	simplescreenrecorde
18079	joe	20	0	1363M	291M	47740	S	0.7	3.9	0:02.26	simplescreenrecorde
18421	joe	20	0	443M	22788	18848	S	0.0	0.3	0:00.25	gnome-screenshot --
18080	joe	20	0	1363M	291M	47740	S	0.0	3.9	0:05.40	simplescreenrecorde
16501	joe	20	0	1904M	325M	73396	S	0.0	4.4	0:07.82	cinnamon --replace
18078	joe	20	0	1363M	291M	47740	S	0.0	3.9	0:39.42	simplescreenrecorde
16531	joe	20	0	1904M	325M	73396	S	0.0	4.4	0:00.09	cinnamon --replace
16439	joe	20	0	886M	40912	32292	S	0.0	0.5	0:01.20	/usr/lib/x86_64-lin
1	root	20	0	33884	4244	2552	S	0.0	0.1	0:01.79	/sbin/init

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice +F8Nice +F9Kill F10Quit

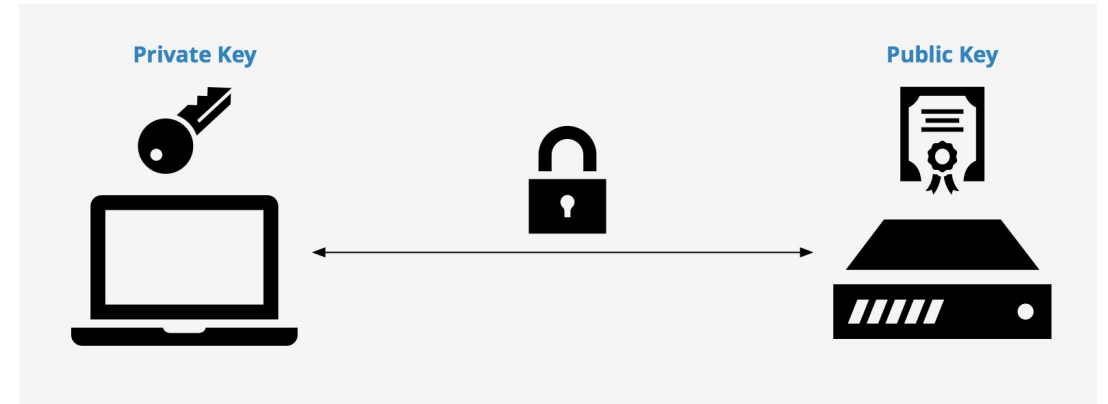
SSH/SCP

WHAT ABOUT REMOTES?

`ssh` = Secure SHell

`ssh-keygen` – generate a ssh key

`ssh -p <port> <ip>`



HOW CAN I SEND FILES WITHOUT GUI ?

`scp` = Secure CoPy

`scp <remote_host>:<file> <local destination>`

`scp <local source> <remote host>:<remote destination>`

`scp <remote host1>:<remote dest1> <remote host 2>:<remote dest2>`





Linux

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