

Complete Linux Bootcamp

Master command line and shell scripting

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HEY! my name is

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graph TD; Application[Application] -- System Calls --> Kernel[Kernel]; Kernel --- CPU[CPU]; Kernel --- Memory[Memory]; Kernel --- Devices[Devices];
```

Application

System Calls

Kernel

CPU

Memory

Devices

```
graph TD; K(Kernel) --- RM(Resource Management); K --- HA(Hardware Abstraction); K --- PMM(Process and Memory Management); K --- DD(Device Driver); K --- SP(Security and Protection);
```

Kernel

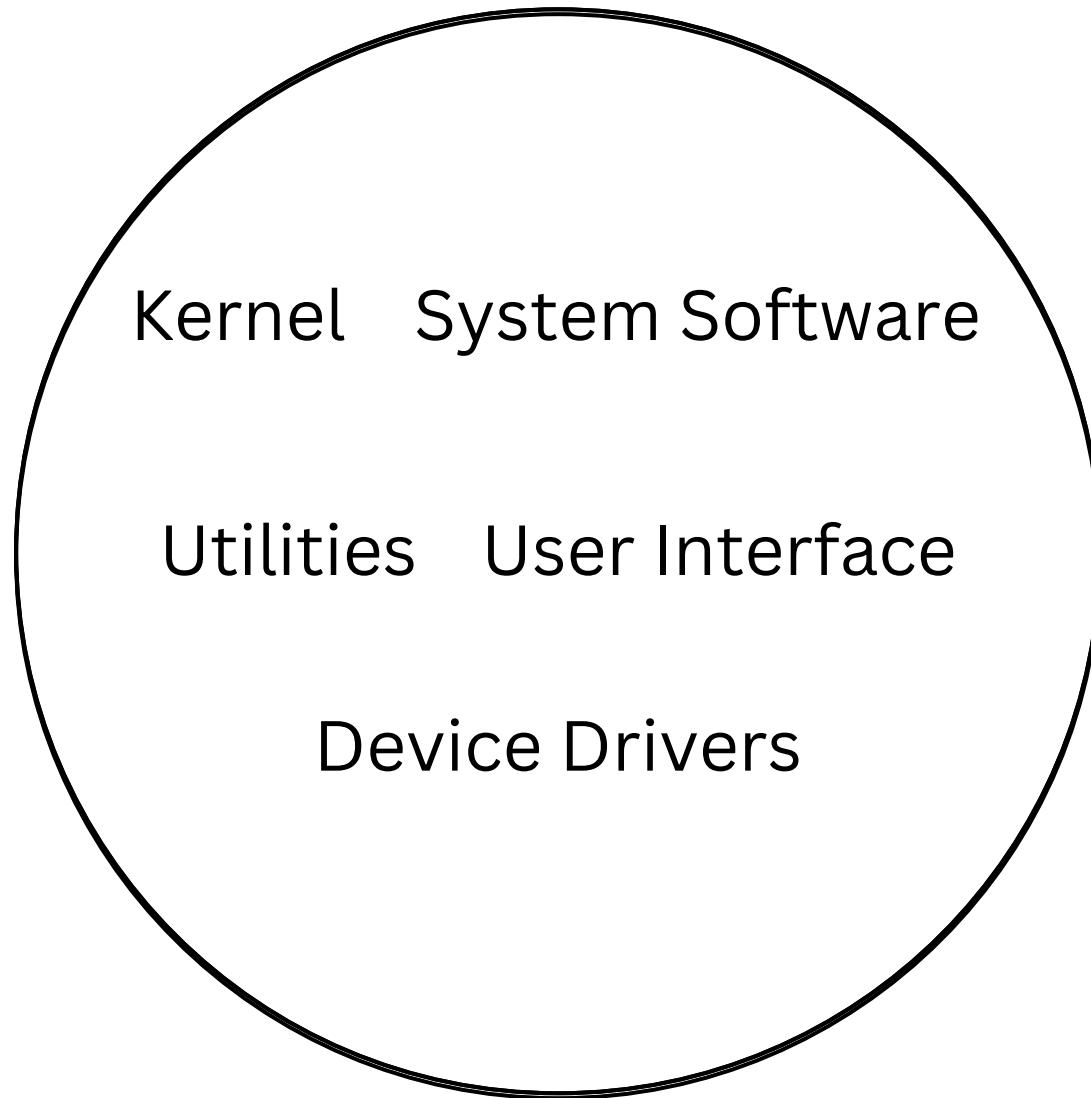
Resource
Management

Hardware
Abstraction

Process and
Memory
Management

Device Driver

Security and
Protection



S

What is Opensource ?

root user (super user)

su: Switch user

sudo: Super user do

id: show information about current user

passwd: Change the password

Everything is a file

Text Editors

- nano
- vim
- gedit
- gvim

Need help?

- `whatis`
- `command --help`
- `man`
- `info`

File Management

cd: Change directory

cd ..: to a directory one level up

cd ~: to a home directory

cd -: to a previous working directory

cd <path>: to a specified path

ls: List files and directories in CWD

ls -l: display detailed info in long format

ls -a: list file and dir with hidden files

ls -t: sorts files and dir by modification time

ls -h: shows file sizes in human-readable format

ls -r: lists files and directories in reverse order

ls -R: lists files and dir recursively, including sub dir

ls -S: sorts files by size, with the largest first

cp source dest: copy files and directories

cp -i: ask before overwriting a file

cp -r: recursively copy an entire dir tree

cp -p: preserves permission, ownership, timestamps

cp -a: cp -r + cp -p

cp -v: display the name of files being copied

`mv source_file dest_dir`: Move a file

`mv old_filename new_filename`: Rename a file

`mv -f source_file dest_dir`: Move and overwrite file

`mv file1 file2 file3 dest_dir`: Move multiple files

`mv source_dir dest_dir`: Move a directory

`mv old_dir new_dir`: Rename a directory

`mv -i source_file dest_dir`: Move with prompt

`mv -p source_file dest_dir`: Move and Preserve

`mv -R source_dir dest_dir`: Move a dir recursively

`mkdir dir_name`: create dir in current loc
`mkdir dir1 dir2 dir3`: create multiple dir in current loc
`mkdir /path/to/directory`: create dir in specific path
`mkdir -p /a/b/c/`: Create a dir with multiple levels of nested dir
`mkdir -m <mode> dir_name`: Create dir with specific permissions
`mkdir -i dir_name`: Create dir interactively
`mkdir -v dir_name`: Create dir and display verbose output

`rmdir dir_name`: Remove an empty dir
`rmdir dir1 dir2 dir3`: remove multiple dir in current loc
`rmdir /path/to/directory`: remove dir from specific path
`rmdir -r dir_name`: Remove a dir and its contents recursively
`rmdir -i dir_name`: remove dir interactively
`rmdir -v dir_name`: remove dir and display verbose output

`touch file_name`: Create a new empty file

`touch file1 file2 file3`: Create multiple new empty files simultaneously

`touch -t yyymmddhhmm file_name`: Create a new file with a specific timestamp

`touch file_name`: Update the access and modification timestamps of an existing file

`rm file_name`: Remove a file

`rm file1 file2 file3`: Remove multiple files simultaneously

`rm -r dir_name`: Remove a directory and its contents recursively

`rm -rf`: Remove directories and their contents forcefully

`rm -i file_name`: Prompt for confirmation before deleting each file

`rm -v file_name`: Remove files and display verbose output

`rm -d dir_name`: Remove empty directories

cat file_name: Display the contents of a file

cat file1 file2 file3: Concatenate multiple files and display their contents

cat > file_name: Create or append to a file using user input

cat file1 file2 > new_file: Concatenate files and save the output to a new file

cat -n file_name: Display line numbers with the file contents

cat -v file_name: Display non-printable characters(tab, line breaks) with the file contents

`head file_name`: Display the first 10 lines of a file

`head -n 5 file_name`: Display a specific number of lines from the beginning of a file

`head -c 100 file_name`: Display the first part of a file with a specific number of bytes

`head file1 file2`: Display the first part of multiple files

`command | head -n 20`: Display the first few lines of a command output continuously

`tail file_name`: Display the last 10 lines of a file

`tail -n 5 file_name`: Display a specific number of lines from the end of a file

`tail -c 100 file_name`: Display the last part of a file with a specific number of bytes

`tail file1 file2`: Display the last part of multiple files

`command | tail -n 20`: Display the last few lines of a command output continuously

chmod 755 file_name: Change permissions using octal notation
chmod -R 755 directory_name: Change permissions recursively
(including subdirectories)
chmod u=rw,go=r file_name: Change permissions using
symbolic notation

chown new_owner file_name: Change the owner of a file
chown new_owner:new_group file_name: Change the owner
and group owner of a file
chown :new_group file_name: Change the group owner of a file
or directory

tar -cvf archive.tar file1 file2 file3: Create a tar archive
tar -cvzf archive.tar.gz file1 file2 file3: Create a compressed tar archive
tar -xvf archive.tar: Extract files from a tar archive
tar -xzvf archive.tar.gz: Extract files from a compressed tar archive
tar -tvf archive.tar: List the contents of a tar archive
tar -rvf archive.tar file4 file5: Append files to an existing tar archive
tar -xvf archive.tar -C /path/to/directory: Extract files from a tar archive to a specific directory

zip archive.zip file1 file2 file3: Create a zip archive

zip -u archive.zip file4 file5: Add files to an existing zip archive:

zip -r archive.zip directory: Create a zip archive with compression

unzip archive.zip: Extract files from a zip archive

unzip archive.zip -d /path/to/directory: Extract files from a zip archive to a specific directory

unzip -l archive.zip: List the contents of a zip archive

unzip archive.zip file1 file2: Extract specific files from a zip archive

`du directory_path`: Display the disk usage of a directory

`du -h directory_path`: Display the disk usage in a human-readable format

grep "pattern" filename: Search for a pattern in a file

grep "pattern" file1 file2 file3: Search for a pattern in multiple files

grep "pattern" -r directory: Search for a pattern in all files within a directory (recursively)

grep -i "pattern" filename: Search for a pattern, ignoring case sensitivity

grep -n "pattern" filename: Display line numbers along with matching lines

grep -v "pattern" filename: Search for lines that do not match a pattern

grep -E "regex_pattern" filename: Use regular expressions for pattern matching

grep -w "pattern" filename: Search for whole word matches only

grep -c "pattern" filename: Display the number of matching lines

grep -A 2 -B 3 "pattern" filename: Search for a pattern, displaying a specific number of lines before and after each matching line

`sed 's/search_string/replacement_string/' filename:` Replace text in a file

`sed 's/search_string/replacement_string/g' filename:` Replace all occurrences of a pattern in a file

`sed -i.bak 's/search_string/replacement_string/' filename:` Replace text in a file, and create a backup of the original file

`sed '/pattern/d' filename:` Delete lines containing a specific pattern in a file

`sed -e 's/pattern1/replacement1/' -e 's/pattern2/replacement2/' filename:` Perform multiple operations with the -e option

`sed -n '5,10p' filename:` Print specific lines from a file

`find . -type f`: Find files in the current directory and its subdirectories

`find . -type d`: Find directories in the current directory and its subdirectories

`find . -name "filename"`: Find files or directories with a specific name

`find . -iname "filename"`: Find files or directories ignoring case sensitivity in the name

`find . -name "*.extension"`: Find files or directories with a specific extension

`find . -mtime -n`: Find files or directories modified within a certain time frame (n days)

`find . -size +1M`: Find files or directories based on their size

`find . -user username`: Find files or directories owned by a specific user

`find . -perm 644`: Find files or directories with specific permissions

`find . -type f -exec command {} \;`: Execute a command on each found file or directory

`find . -empty`: Find empty files or directories

`find . -atime +n`: Find files based on their access time (n days)

`find . -group groupname`: Find files or directories based on their group ownership

`find . -regex "pattern"`: Find files or directories with specific names using regular expressions

awk '{print \$1, \$3}' filename: Print specific columns from a file

awk -F',' '{print \$1, \$3}' filename: Specify a custom delimiter (e.g., comma) for input and output

awk '\$3 > 50 {print \$1, \$3}' filename: Use a condition to filter records

awk '{print \$1, \$3}' filename > output.txt: Redirect output to a file

awk -F',' -v OFS='|' '{print \$1, \$3}' filename: Specify output field separator

awk '{print NR, \$0}' filename: Print line number and content

awk '{total += \$2} END {print "Total:", total}' filename: Perform calculations on selected fields

awk '/pattern/ {print}' filename: Print lines where a specific column matches a pattern

sort filename: Sort lines of a file in ascending order
sort -r filename: Sort lines of a file in descending order
Sort lines ignoring case sensitivity: sort -f filename
sort -R filename: Sort lines in a file in a random order
sort -u filename: Sort lines and remove duplicate lines
sort filename -o outputfile: Sort lines in a file and write the result to a new file

wc -l filename: Count the number of lines in a file
wc -w filename: Count the number of words in a file
wc -c filename: Count the number of characters in a file
wc filename: Count the number of lines, words, and characters in a file
command | wc: Count the number of lines, words, and characters from the output of a command
wc -l -w -c file1 file2 file3: Count the number of lines, words, and characters for multiple files and display a total at the end

journalctl: View all system logs

journalctl -u ssh.service

journalctl -p err: View logs with a error log level

journalctl --since "2023-06-27 00:00:00" --until "2023-06-28 12:00:00": View logs within a specific time range

`sudo ufw allow 80`: Allow HTTP traffic

`sudo ufw default deny incoming`: Block all other incoming traffic

`ufw reset`: reset

`ufw delete allow 80/tcp`: Delete rule

`ufw deny 80/tcp`: Deny rule

`iptables -L`: View Iptable

`iptables -A INPUT -p tcp --dport 22 -j ACCEPT`: Allow SSH connections

`iptables -P INPUT DROP`: Drop all other incoming traffic

`iptables -F`: Flush existing rules


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sudo ssh -i "mykey.pem" user@ip
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sudo scp -i "mykey.pem" <file-name>  
user@ip:remote_dir
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sudo rsync -av -e "ssh -i key.pem"  
ubuntu@ip:/home/ubuntu/remote_dir local_dir
```