



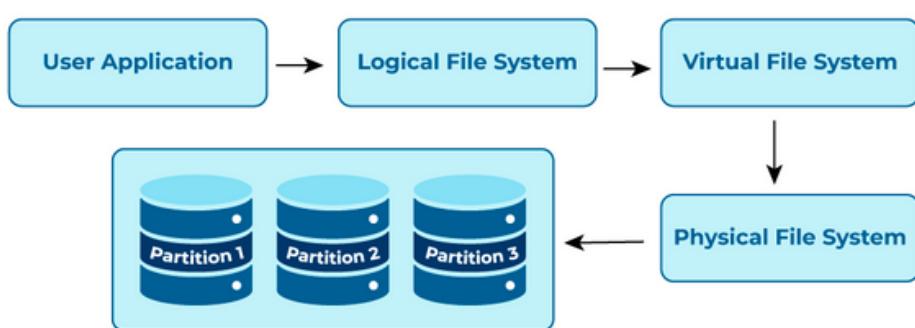
Linux File Navigation



Linux File Navigation

- This [session](#) (L6 S4) explained Linux file navigation as it refers to moving through directories in a Linux system.
- A Linux system is organized in a hierarchical structure of directories.
- Navigating this structure lets users access, edit, and organize files.

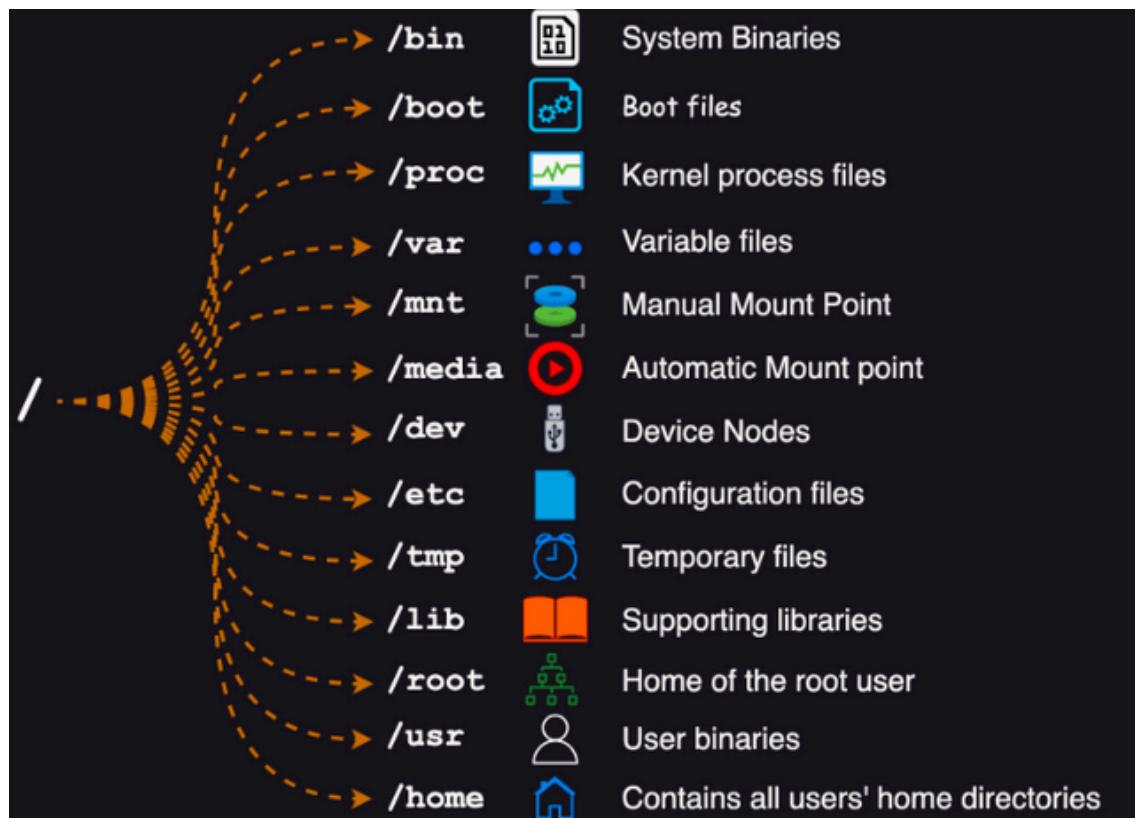
The Architecture of a File System





Linux File Navigation

Why is it Important?



- **Accessing Files:** To open or work on files, you need to know the correct directory.
- **Organizing Files:** Proper navigation helps keep files organized.
- **System Maintenance:** Administrators use it for software installation and system updates.
- **Efficient Workflow:** Quick and accurate navigation improves productivity.



Linux File Navigation

File Operations Commands

Following are some main commands for File Operations:

- 1) Print Working Directory (pwd)
- 2) Manual (man)
- 3) Make Directory (mkdir)
- 4) Create an empty file (touch)
- 5) Move/Rename files (mv)
- 6) Copy files or directories (cp)
- 7) Remove/Delete files (rm)

1) Print Working Directory (pwd)

Syntax of Command:

`pwd`

Example:

`pwd` outputs the path of the directory you are currently in.



Linux File Navigation

File Operations Commands

2) Manual (`man`)

Syntax of Command:

`man [command]`

Example:

`man ls` shows the manual for the `ls` command.

3) Make Directory (`mkdir`)

Syntax of Command:

`mkdir [directory_name]`

Example:

`mkdir new_folder` creates a directory named "new_folder."

4) Create an empty file (`touch`)

Syntax of Command:

`touch [file_name]`

Example:

`touch file.txt` creates an empty file named "file.txt."



Linux File Navigation

File Operations Commands

5) Move/Rename files (mv)

Syntax of Command:

`mv [source] [destination]`

Example:

`mv old_name.txt new_name.txt` renames "old_name.txt".

6) Copy files or directories (cp)

Syntax of Command:

`cp [source] [destination]`

Example:

`cp file.txt backup.txt` copies "file.txt" to "backup.txt."

7) Remove/Delete files (rm)

Syntax of Command:

`rm [options] [file/directory]`

Example:

`rm file.txt` deletes "file.txt."



Linux File Navigation

Content View Commands

Following are some main commands for Content View Commands:

- 1) Concatenate file content (cat)
- 2) View file content navigation (less)
- 3) View file content (more)
- 4) Display last lines of file (tail)

1) Concatenate file content (cat)

Syntax of Command:

`cat [file]`

Example:

`cat file.txt` displays the content of "file.txt."

2) View file content navigation (less)

Syntax of Command:

`less [file]`

Example:

`less file.txt` opens "file.txt" for viewing.



Linux File Navigation

Content View Commands

3) View file content (more)

Syntax of Command:

`more [file]`

Example:

`more file.txt` displays "file.txt" one screen at a time.

4) Display last lines of file (tail)

Syntax of Command:

`tail [options] [file]`

Example:

`tail -n 5 file.txt` shows the last 5 lines of "file.txt."



Linux File Navigation

Navigation Linux File System

Following are some main commands for Navigation

Linux File System:

- 1) Stay in the current directory (cd)
- 2) Change Directory (cd)
- 3) Move Up into directory (cd ..)
- 4) Back to the previous directory (cd -)
- 5) Back to root directory (cd /)
- 6) Move to absolute path (cd/path/to/directory)

1) Stay in the current directory (cd)

Syntax of Command:

`cd`

Example:

Simply typing `cd` takes you to the home directory.

2) Change Directory (cd)

Syntax of Command:

`cd [directory_path]`

Example:

`cd /home/user/documents` changes the current directory



Linux File Navigation

Navigation Linux File System

3) Move Up into directory (cd ..)

Syntax of Command:

`cd ..`

Example:

`cd ..` would take you from `/home/user/` to `/user.`

4) Back to the previous directory (cd -)

Syntax of Command:

`cd -`

Example:

Use `cd -`, it will take you back to `" /home/user."`

5) Back to root directory (cd /)

Syntax of Command:

`cd /`

Example:

`cd /` moves you to the root directory of the file system.

6) Move to absolute path (cd/path/to/directory)

Syntax of Command:

`cd /path/to/directory`

Example:

`cd /usr/local/bin` takes you directly to the directory.



Linux File Navigation

File Management & Permissions

Following are some main commands for File Management & Permissions:

- 1) List directory contents (`ls`)
- 2) List with detailed information (`ls -l`)
- 3) List all files (`ls -a`)
- 4) List non-printable characters files (`ls -b`)
- 5) List files with numeric IDs (`ls -n`)
- 6) Change file permissions (`chmod`)
- 7) Change file owner and group (`chown`)
- 8) Convert and copy files (`dd`)
- 9) Display last lines of file (`tail`)
- 10) Search for files (`find`)
- 11) Securely copy files (`scp`)
- 12) Show disk space (`df`)



Linux File Navigation

File Management & Permissions

1) List directory contents (ls)

Syntax of Command:

`ls [options] [file]`

Example:

`ls -l` lists directory contents with detailed information (permissions, ownership, size).

2) List with detailed information (ls -l)

Syntax of Command:

`ls -l [file]`

Example:

`ls -l /home/user/` shows detailed information about files in the home directory.

3) List all files (ls -a)

Syntax of Command:

`ls -a [file]`

Example:

`ls -a /home/user/` lists all files, including hidden ones, in the specified directory.



Linux File Navigation

File Management & Permissions

4) List non-printable characters files (ls -b)

Syntax of Command:

`ls -b [file]`

Example:

`ls -b /home/user/` shows non-printable characters in filenames in the directory.

Command Full Name:

5) List files with numeric IDs (ls -n)

Syntax of Command:

`ls -n [file]`

Example:

`ls -n /home/user/` lists files and shows numeric IDs for users and groups.

6) Change file permissions (chmod)

Syntax of Command:

`chmod [options] [permissions] [file]`

Example:

`chmod 755 file.txt` changes the permissions of file.txt to be readable, but only writable by the owner.



Linux File Navigation

File Management & Permissions

7) Change file owner and group (chown)

Syntax of Command:

chown [options] [owner][:group] [file]

Example:

chown user:group file.txt changes the owner of file.txt to "user" and the group to "group".

8) Convert and copy files (dd)

Syntax of Command:

dd [options] if=[input file] of=[output file]

Example:

dd if=/dev/sda of=/dev/sdb clones the contents of one disk to another.

9) Display last lines of file (tail)

Syntax of Command:

tail [options] [file]

Example:

tail -n 10 file.txt displays the last 10 lines of file.txt.



Linux File Navigation

File Management & Permissions

10) Search for files (find)

Syntax of Command:

`find [path] [options] [expression]`

Example:

`find /home -name "*.txt"` searches for files in home directory.

11) Securely copy files (scp)

Syntax of Command:

`scp [options] [source] [destination]`

Example:

`scp file.txt user@remote:/path/to/destination/` copies file.txt.

12) Show disk space (df)

Syntax of Command:

`df [options] [file]`

Example:

`df -h` shows disk usage in human-readable format.



Linux File Navigation

Process Management

Following are some main commands for Process Management:

- 1) Interactive process viewer (htop)
- 2) Report a snapshot (ps)
- 3) Terminate processes by ID (kill)
- 4) Display the command history (history)
- 5) Display free memory (free)

1) Interactive process viewer (htop)

Syntax of Command:

`htop`

Example:

`htop` launches an interactive process viewer.

2) Report a snapshot (ps)

Syntax of Command:

`ps [options]`

Example:

`ps aux` shows all running processes.



Linux File Navigation

Process Management

3) Terminate processes by ID (kill)

Syntax of Command:

`kill [options] [pid]`

Example:

`kill -9 12345` forcibly terminates the process with ID 12345.

4) Display the command history (history)

Syntax of Command:

`history [options]`

Example:

`history` displays a list of previously executed commands.

5) Display free memory (free)

Syntax of Command:

`free [options]`

Example:

`free -h` shows memory usage in human-readable format.



Linux File Navigation

User & Group Navigation

Following are some main commands for User & Group Navigation:

- 1) Add a new user (sudo useradd)
- 2) Set a user password (sudo passwd)
- 3) Delete a user (sudo userdel)
- d) Show user ID (id)
- e) Show group ID (id -g)

1) Add a new user (sudo useradd)

Syntax of Command:

`sudo useradd [username]`

Example:

`sudo useradd john` adds a new user named "john".

2) Set a user password (sudo passwd)

Syntax of Command:

`sudo passwd [username]`

Example:

`sudo passwd john` sets the password for the user "john".



Linux File Navigation

User & Group Navigation

3) Delete a user (`sudo userdel`)

Syntax of Command:

`sudo userdel [username]`

Example:

`sudo userdel john` deletes the user "john".

4) Show user ID (`id`)

Syntax of Command:

`id [options] [username]`

Example:

`id john` shows the user ID for the user "john".

5) Show group ID (`id -g`)

Syntax of Command:

`id -g [groupname]`

Example:

`id -g admin` shows the group ID of the "admin" group.



Linux File Navigation

Text Manipulation

Following are some main commands for Text Manipulation:

- 1) Sort text lines in reverse (sort -r)
- 2) Sort lines of text (sort -f)
- 3) Remove file line sections (cut)
- d) Compare files line (diff)

1) Sort text lines in reverse (sort -r)

Syntax of Command:

sort -r [file]

Example:

sort -r names.txt sorts the lines in names.txt in reverse order.

2) Sort lines of text (sort -f)

Syntax of Command:

sort -f [file]

Example:

sort -f names.txt sorts the lines in names.txt ignoring case.



Linux File Navigation

Text Manipulation

3) Remove file line sections (cut)

Syntax of Command:

`cut [options] [file]`

Example:

`cut -d ',' -f 1 data.csv` extracts the first field of each line in `data.csv`.

4) Compare files line (diff)

Syntax of Command:

`diff [options] [file1] [file2]`

Example:

`diff file1.txt file2.txt` compares `file1.txt` and `file2.txt` line by line.

System Information

Following are some main commands for System Information:

- a) Display the OS name (`uname -o`)
- b) Show the machine hardware (`uname -m`)
- c) Show the kernel release (`uname -r`)
- d) Display CPU architecture info (`lscpu`)



Linux File Navigation

System Information

1) Display the OS name (uname -o)

Syntax of Command:

`uname -o`

Example:

`uname -o` displays the operating system name.

2) Show the machine hardware (uname -m)

Syntax of Command:

`uname -m`

Example:

`uname -m` displays the hardware name.

3) Show the kernel release (uname -r)

Syntax of Command:

`uname -r`

Example:

`uname -r` displays the kernel release.

4) Display CPU architecture info (lscpu)

Syntax of Command:

`lscpu`

Example:

`lscpu` shows detailed CPU architecture information.



Linux File Navigation

Package Management

Following are some main commands for Package Management:

- 1) Install or remove software packages (apt-get)
- 2) Uninstall a specific package (sudo apt-get remove)

1) Install or remove software packages (apt-get)

Syntax of Command:

`apt-get [options]`

Example:

`sudo apt-get install package_name` installs a package.

2) Uninstall a specific package (sudo apt-get remove)

Syntax of Command:

`sudo apt-get remove [package_name]`

Example:

`sudo apt-get remove firefox` uninstalls Firefox.



Linux File Navigation

Network Configuration & Monitoring

Following are some main commands for Network Configuration & Monitoring:

- 1) Display network interfaces (ifconfig)
- 2) Show routing, devices (ip)
- 3) Query domain name servers (nslookup)
- 4) Show network connection (netstat)
- 5) Connect to remote systems (telnet)
- 6) Transfer data from or to a server (curl)

1) Display network interfaces (ifconfig)

Syntax of Command:

ifconfig [interface]

Example:

ifconfig eth0 shows the configuration of network interface eth0.

2) Show routing, devices (ip)

Syntax of Command:

ip [options]

Example:

ip addr shows IP addresses assigned to all network interfaces.



Linux File Navigation

Network Configuration & Monitoring

3) Query domain name servers (nslookup)

Syntax of Command:

`nslookup [hostname]`

Example:

`nslookup example.com` queries the DNS server for the IP address

4) Show network connection (netstat)

Syntax of Command:

`netstat [options]`

Example:

`netstat -an` shows all network connections and listening ports.

5) Connect to remote systems (telnet)

Syntax of Command:

`telnet [hostname] [port]`

Example:

`telnet example.com 80` connects to example.com on port 80.

6) Transfer data from or to a server (curl)

Syntax of Command:

`curl [options] [url]`

Example:

`curl http://example.com` retrieves data from example.com.



Linux File Navigation

Text Searching

Following are some main commands for Text Searching:

- 1) Case-insensitive search (grep -i)
- 2) Show line in search results (grep -n)
- 3) Show lines not matching pattern (grep -v)
- 4) Count occurrences of the pattern (grep -c)

1) Case-insensitive search (grep -i)

Syntax of Command:

grep -i [pattern] [file]

Example:

grep -i "hello" file.txt searches for the word "hello" ignoring case.

2) Show line in search results (grep -n)

Syntax of Command:

grep -n [pattern] [file]

Example:

grep -n "hello" file.txt searches for "hello" & shows line numbers.



Linux File Navigation

Text Searching

3) Show lines not matching pattern (grep -v)

Syntax of Command:

```
grep -v [pattern] [file]
```

Example:

grep -v "hello" file.txt shows all lines that do not contain "hello."

4) Count occurrences of the pattern (grep -c)

Syntax of Command:

```
grep -c [pattern] [file]
```

Example:

grep -c "hello" file.txt counts how many times "hello" appears.

System Monitoring

Following are some main commands for System

Monitoring:

- 1) List open files (lsof)
- 2) List open files for a user (lsof -u)



Linux File Navigation

System Monitoring

1) List open files (lsof)

Syntax of Command:

`lsof [options]`

Example:

`lsof` lists all open files.

2) List open files for a user (lsof -u)

Syntax of Command:

`lsof -u [username]`

Example:

`lsof -u john` lists all open files for the user "john".

Miscellaneous

Following are some main Miscellaneous commands:

- 1) List running Docker containers (`docker ps`)
- 2) List Docker images (`docker images`)
- 3) Build a Docker image (`docker build`)
- 4) Run a command in a new container (`docker run`)
- 5) Stop a running container (`docker stop`)
- 6) Create containers (`docker-compose up`)
- 7) Stop containers (`docker-compose down`)



Linux File Navigation

Miscellaneous

1) List running Docker containers (docker ps)

Syntax of Command:

`docker ps`

Example:

`docker ps` lists all running Docker containers.

2) List Docker images (docker images)

Syntax of Command:

`docker images`

Example:

`docker images` lists all Docker images on the system.

3) Build a Docker image (docker build)

Syntax of Command:

`docker build [options] [path]`

Example:

`docker build -t myimage .` builds a Docker image from the Dockerfile in the current directory.

4) Run a command in a new container (docker run)

Syntax of Command:

`docker run [options] [image]`

Example:

`docker run -it myimage /bin/bash` starts a new container.



Linux File Navigation

Miscellaneous

5) Stop a running container (`docker stop`)

Syntax of Command:

`docker stop [container_id]`

Example:

`docker stop 12345` stops the container with ID 12345.

6) Create containers (`docker-compose up`)

Syntax of Command:

`docker-compose up [options]`

Example:

`docker-compose up` starts all containers in `docker-compose.yml`

7) Stop containers (`docker-compose down`)

Syntax of Command:

`docker-compose down [options]`

Example:

`docker-compose down` stops and removes all containers.



Linux File Navigation

Screen

Following are some main commands for Screen:

- 1) Reattach to a screen session (screen -r)
- 2) Detach from the screen (Ctrl+A+D)

1) Reattach to a screen session (screen -r)

Syntax of Command:

screen -r [screen_name]

Example:

screen -r myscreen reattaches to the screen session.

2) Detach from the screen (Ctrl+A+D)

Syntax of Command:

Ctrl+A+D

Example:

Ctrl+A+D detaches current screen session without stopping it.

PM2

PM2 is a process manager for Node.js applications that can manage apps in production environments.