	team@ltsfoss: ~	
team@itsfoss:"\$ 15 -la		
total 128		
drwxr-x 21 team team	4096 Mar 6 15:24 .	
drwxr-xr-x 3 root root	4096 Mar 2 16:14	
-rw 1 team team	3382 Mar 6 15:25 .bash_history	
-rw-rr 1 team team	220 Mar 2 16:14 .bash_logout	
-rw-rr 1 team team	3963 Mar 6 15:10 .bashrc	
drwx 15 team team	4096 Mar 6 15:15 .cache	
drwx 19 team team	4096 Mar 6 15:25 .config	
drwxr-xr-x 2 team team	4096 Mar 2 16:32 Desktop	
drwxr-xr-x 2 team team	4096 Mar 2 16:32 Documents	
drwxr-xr-x 4 team team	4096 Mar 6 15:11 Downloads	
-rw-rw-r 1 team team	39 Mar 6 10:24 files	
drwxr-xr-x 2 team team	4096 Mar 6 09:37 .fontconfig	
drwx 2 team team	4096 Mar 6 15:31 .gnupg	
-rw-rw-r 1 team team	15377 Mar 6 12:13 install.sh	
drwxrwxr-x 3 team team	4096 Mar 6 10:14 .java	
drwxr-xr-x 6 root root	4096 Dec 29 13:14 LanguageTool-6.0-stable	
-rw-rw-r 1 team team	265 Mar 6 10:21 .languagetool.cfg	

## What is Unix?

Unix is a powerful and versatile operating system known for its portability and robust nature. It's the foundation of many modern operating systems like macOS and Linux, influencing the development of popular technologies like the internet.

By Ranjeet Kaur



## **History and Development**

#### **Early Roots**

Developed in the late 1960s at Bell Labs, Unix was initially a research project aimed at creating a user-friendly and efficient operating system.

#### **First Release**

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The first version of Unix, known as Version 7, was released in 1979, making it widely accessible and marking a significant milestone.

#### **Open Source Revolution**

The open source movement played a pivotal role in the evolution of Unix. Linux, a Unix-like operating system, gained popularity due to its free and open-source nature.

#### Modern Unix

Today, Unix continues to evolve, powering everything from servers to supercomputers and influencing the development of modern operating systems.



## Unix Operating System Fundamentals

#### Kernel

The core of the Unix system, responsible for managing hardware resources and providing a platform for applications.

#### Shell

A command-line interpreter that allows users to interact with the kernel and execute commands.

#### Utilities

A collection of programs that perform various tasks, from file manipulation to system administration.

# Unix File System and Directory Structure

#### **Root Directory**

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The top-level directory represented by a forward slash (/), containing all other directories and files.

#### **Hierarchical Structure**

Organized in a tree-like structure, with directories branching out from the root directory.

#### File and Directory Permissions

Controls access to files and directories, granting specific permissions to users and groups.





## **Unix Commands and Utilities**

#### **Basic Commands**

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Commands like ls, cd, mkdir, rm, and cp for file manipulation, directory navigation, and more.

#### System Administration

Commands like top, ps, and kill for monitoring and managing system processes.

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#### **Text Processing**

Utilities like grep, sed, and awk for searching, replacing, and manipulating text data.

#### 4 Networking Tools

Utilities like ping, netstat, and ifconfig for network connectivity testing and configuration.

## **Unix Shells and Scripting**

	Bourne Shell (sh)	The original Unix shell, still widely used and serves as the basis for many other shells.
	Bourne Again Shell (bash)	A powerful and popular shell known for its extensive scripting capabilities and interactive features.
	C Shell (csh)	A shell that emphasizes scripting and features a syntax similar to the C programming language.
	Korn Shell (ksh)	A shell that combines features from both sh and csh, known for its advanced scripting capabilities.



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# Unix Security and Permissions

## $\bigcirc$

#### **User Permissions**

Controls what each user can do with files and directories.

### 22

#### **Group Permissions**

Allows you to grant specific permissions to groups of users.



#### **Other Permissions**

Determines the access rights for users who are not the owner or part of the group.

#### Root User

The administrator account with unrestricted access to the system.

	3			<b>Keuseot.com</b>			
5	2	Unix/Linu	x Co	mma	nd Reference		
File comm	nands			System I	nfo		
s s-al cd dir cd m Tile m -f dir m -f dir m -f dir m -f dir file file file file file file n -s file link ouch file out s file	Director Formativ Change Show CL Create of Delete of For cent Copy file Copy dil Rename existing Create of Director	v listing val listing with hidden files directory to dir to home rent directory a directory dir move fire listicatory dir move fire 1 to dila2, create dir2 if if doesn't exit 1 to dila2, create dir2 if if doesn't exit or move file 1 files. If filed 2 is an directory, moves file 1 into directory file2 yrupbale file, files to file water directory to file.	date cal uptime w whoami finger use uname - cat /proc man con df du free whereis c which ap	er 2 2 /cpuinfo 2 /meminfo nmand 100 100	show the current date and time show this manifix calendar show current update display who is online with you are logged in as display information about series information cpu information show then information show then manual for command show disk tayse show remetry and swap usage show remetry and swap usage show which app will be run by default		
ar > Trile Places standard input into tile tore file Output the contents of file cad file Output the fires 10 lines of file all file Output the last 10 lines of file Output the contents of file as		the contents of file he firest 10 lines of file he last 10 lines of file he contents of file as it grows, with the last 10 lines	tar cf file.t	Compres ar files	sion create a tar named file:tar containing file		
	display of	agement	tar xf file.to tar czf file. tar xzf file.t tar cjf file.t tar xjf file.t gzip file gzip -d file	ar tar.gz files tar.gz ar.bz2 ar.bz2 .gz	extract the files from file.tar create a tar with Cajo compression extract a tar using Cajo create a tar with Bajo compression extract a tar using Bajo2 compresses file and renames it to file.gz decompresses file.gz back to file		
ill pid kill proc illall proc kill all p og lists stop g Brings t g		process id pid all processes named proc * stopped or background jobs; resume a pped job in the background gg the most recent job to the foreground pro the d to the foreground		Network			
File Per	missio	ns	ping host whois do dig dom dig -x ho wget file wget -c t	main ain st	ping host and output results get whois information for domain get DNS information for domain reverse lookup host download file continue a stopped download		
imod octal file	change which co group, a • 4 - rec • 2 - writ • 1 - exe Example chmod 7 world. Fo	the permissions of file to octal, na befound separately for user, nd world by adding: d (f) e (w) cute (x) 77 - read, write, execute for all 55 - rws for owner, rx for group and r more options, see <b>man chmod</b> .	Install fra ./config make make in	om source: ure	intella escelares (Dobien)		
SSH			rpm -Uv	h pkg.rpm	install a package (RPM)		
user@host connect to host as user   -p port user@host connect to host on port port as user   -copy-id user@host connect to host on port port as user   scopediation connect to host on port port as user   expop.id user@host connect to host on user to   enable a keyed or posswordless login   Searching search for pattern in files   sport for main search for pattern in files   search for pattern in the output of command search for pattern in the output of command   rate file ind all instances of file		Ctrl+C Ctrl+Z Ctrl+D Ctrl+W	halts the c stops the c foreground log out of erases one	surrent command surrent command, resume with fg in th d or bg in the background current session, similar to exit e word in the current line			
		arch for pattern in files arch recursively for pattern in dir arch for pattern in the output of command d all instances of file	Ctrl+U Ctrl+R II exit *	erases the type to bri repeats th log out of use with e	: the whole line o bring up a recent command Is the last command It of current session Ith extreme caution		

gri gri co .

## Unix in the Modern Computing Landscape

#### Servers

Unix-based systems are widely used as servers, handling web services, databases, and other critical applications.

#### **Supercomputers**

Unix-based systems are often used for high-performance computing tasks, such as scientific simulations and data analysis.

#### **Embedded Systems**

Unix-like operating systems are used in a variety of embedded systems, such as network routers and industrial control systems.

#### Mobile Devices

Unix-based operating systems, such as Android, power millions of mobile devices worldwide.

