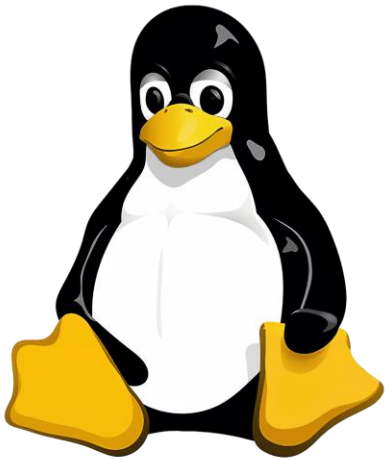




CONTROLLING ACCESS IN LINUX



LINUX

Presented by: **Brahim Ferik**

INTRODUCTION

- **Linux's permission system manages file/folder access, ensuring security and stability. Each file/directory has permissions dictating:**
 - **Who** can access the file/directory?
 - **What** operations (read, write, execute) they can perform?

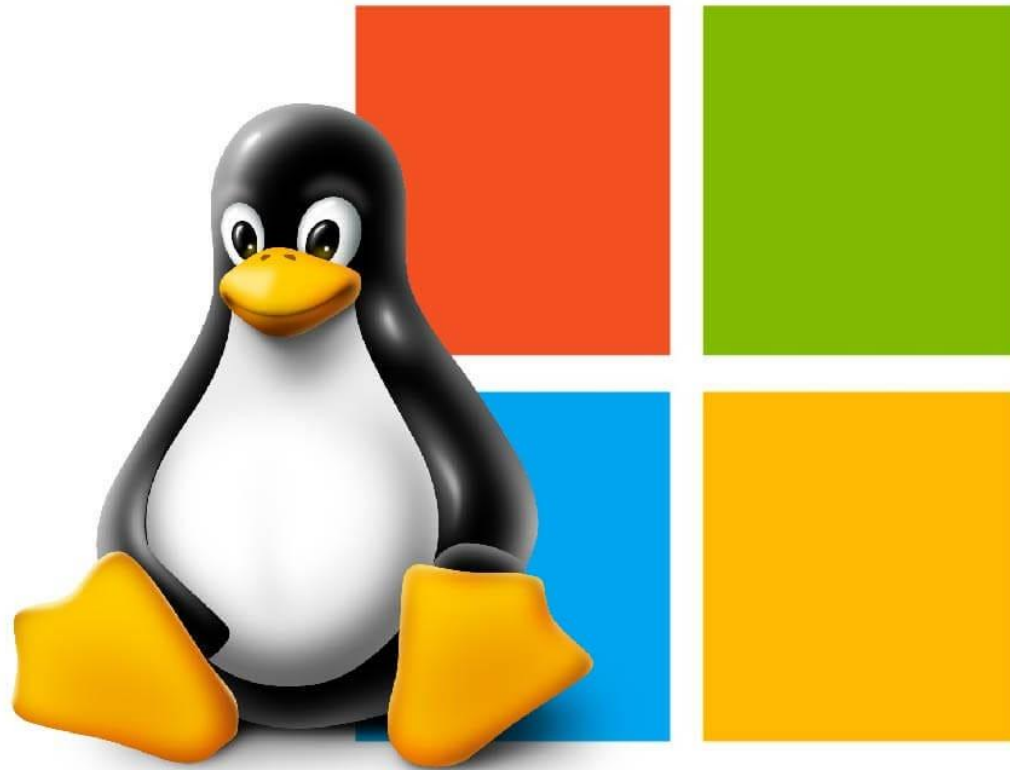


LESSON 1: TOP 10 ESSENTIAL LINUX COMMANDS

- ❑ **Welcome to Linux basics! Today, we'll explore **a set of essential commands** to efficiently navigate, perform operations, and build foundational skills for Linux and cybersecurity tasks.**



WINDOWS SUBSYSTEM FOR LINUX (WSL)



1. LS (LIST DIRECTORY CONTENTS)

❑ **ls**

❑ **ls -A**

❑ **ls -l**

```
abhishek@itsfoss: ~  
abhishek@itsfoss:~$ ls  
Apps      dev      Dropbox  Music    Public  Templates  
Audio     Documents itsfoss-backup Pictures script Videos  
Desktop   Downloads MEGAsync  practice snap  
abhishek@itsfoss:~$
```



HIDE FILES ON ANDROID - DEMO

- ❑ To create a hidden folder on **Android systems**, rename the folder to begin with a **dot (.)** character. This action makes the folder invisible in default file explorers.



2. CD (CHANGE DIRECTORY)

☐ **cd Documents**

☐ **cd ..**

☐ **cd ~ or cd**



3. PWD (PRINT WORKING DIRECTORY)

 **pwd**



4. MKDIR (MAKE DIRECTORY)

- ❑ **mkdir name_rep**
- ❑ **mkdir -p cybersecurity/{reports,logs,tools}**



5. TOUCH VS CAT (FILE CREATION)

- ☐ **touch report.txt**
- ☐ **cat**
 - **Displays content of files.**
 - **Concatenates multiple files.**
 - **Creates files with initial content.**



6. RM (REMOVE FILES/DIRECTORIES)

- ☐ **rm filename.txt**
- ☐ **rm -r directory_name**
- ☐ **rm -ri directory_name**



7. SUDO (SUPERUSER DO)

☐ **Executes commands requiring administrative privileges:**

- **sudo apt update**
- **sudo -i**



8. SU (SWITCH USER)

☐ **Switches your current session to another user**

account:

☐ **su -**

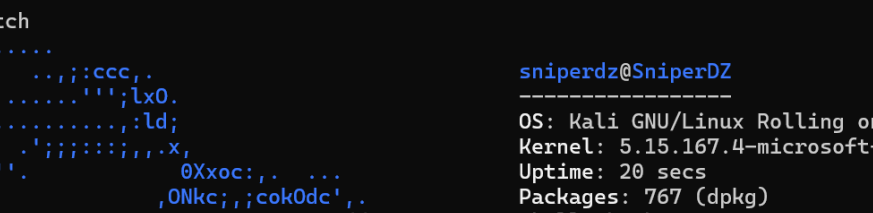


9. SEARCHING AND DISPLAYING INFORMATION

- ❑ **grep "error" log.txt**
- ❑ **grep -r "TODO" /project**
- ❑ **find ~/Desktop -type f -name "*.txt"**



PRACTICAL LINUX EXERCISES




The screenshot shows a Kali Linux terminal window with the title bar "sniperdz@SniperDZ: ~". The user has entered the command `neofetch`. The output displays a stylized ASCII art logo for "SniperDZ" on the left and system information on the right. The system information includes the OS (Kali GNU/Linux Rolling on Windows), kernel (5.15.167.4-microsoft-standard), uptime (20 secs), packages (767 dpkg), shell (bash 5.2.21), terminal (Relay(11)), CPU (Intel i7-8650U (8) @ 2.11GHz), GPU (dfc0:00:00.0 Microsoft Corporation), and memory (281MiB / 7630MiB). Below the system information is a color calibration bar with 11 squares.

```

.....
      .::ccc,.
      .....l;x0.
      .....ld;
      .....x,
      .....0Xxoc;,.
      .....ONkc;;cokOdc',.
      .....OMo      'ddo.
      .....dMc      :00;
      .....0M.      :.o.
      .....;Wd
      .....;XO,
      .....d00dLc;,.
      .....'.::cd00d;,.
      .....:d;'.::;
      .....d, '
      .....;l'..
      .....o
      .....c
      .....
  
```

sniperdz@SniperDZ

OS: Kali GNU/Linux Rolling on Windows
Kernel: 5.15.167.4-microsoft-standard
Uptime: 20 secs
Packages: 767 (dpkg)
Shell: bash 5.2.21
Terminal: Relay(11)
CPU: Intel i7-8650U (8) @ 2.11GHz
GPU: dfc0:00:00.0 Microsoft Corporation
Memory: 281MiB / 7630MiB



<https://shorturl.at/J1m2Y>



WHAT IS CHMOD (CHANGE MODE)?

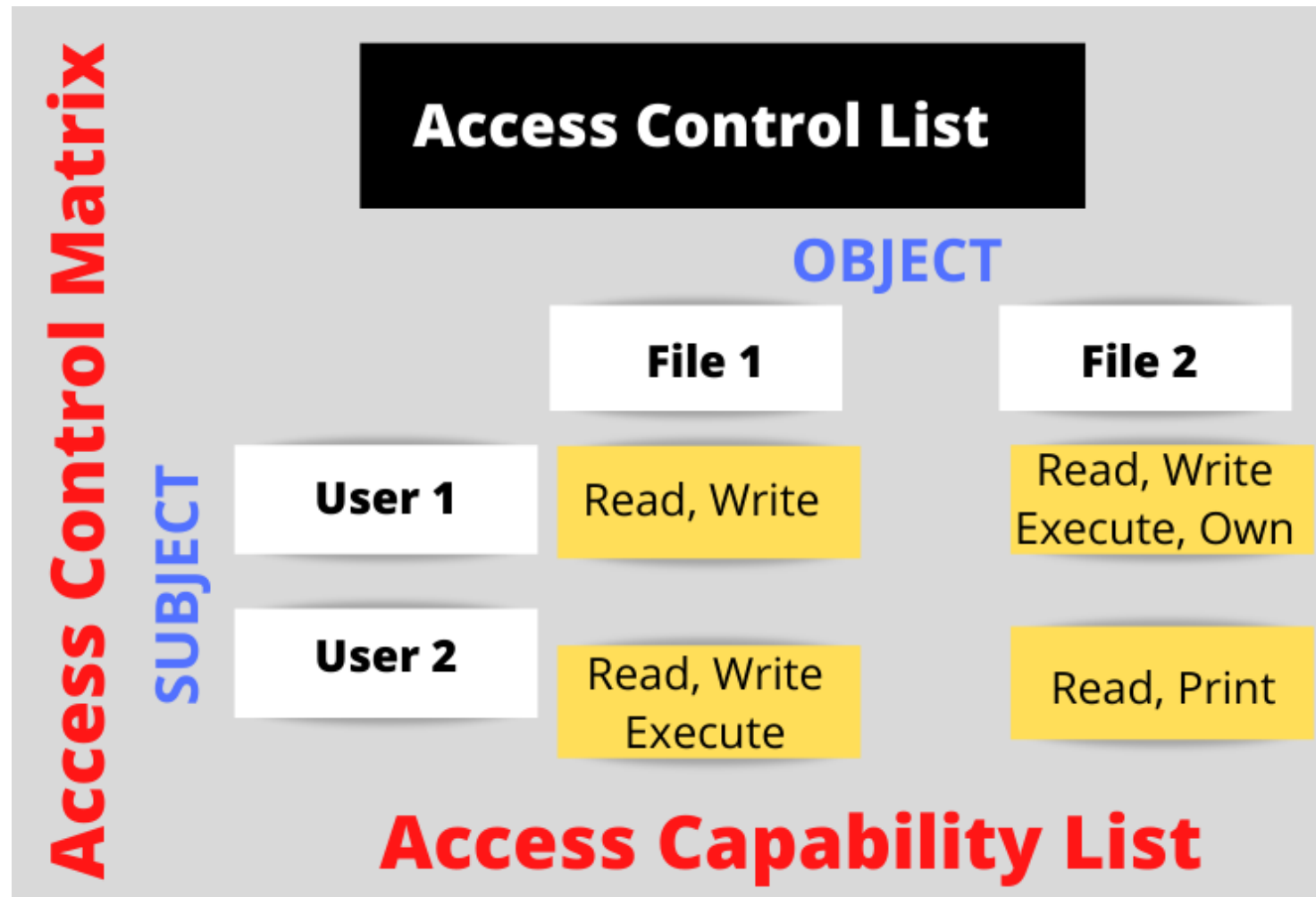
- ❑ **Linux/Unix command to **change permissions** of files/directories.**

Chmod

**MASTERING FILE AND DIRECTORY
PERMISSIONS IN LINUX**



ACCESS CONTROL MATRIX



ACCESS CONTROL MATRIX

- ❑ **Visual Clarity:** Easily see "who can do what."
- ❑ **Restrict access** to only what's necessary.
- ❑ **Audit & Track** permissions for security reviews.



WHAT IS CHMOD?

❑ Controls who can:

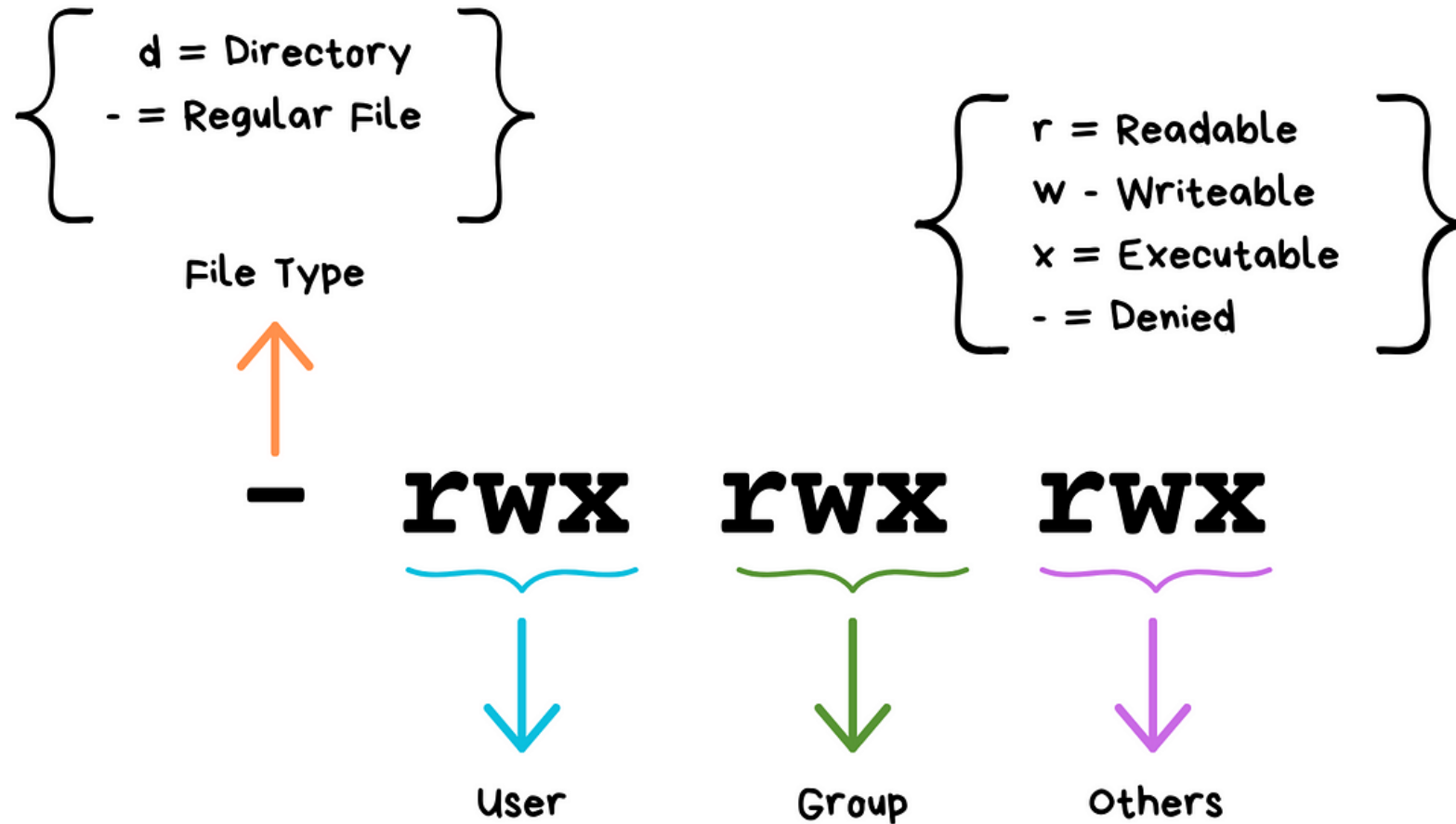
- Read (**r**), Write (**w**), Execute (**x**).

❑ Three categories:

- User (**u**): Owner.
- Group (**g**): Members of the file's group.
- Others (**o**): Everyone else.



PERMISSION TYPES



SYMBOLIC METHOD

❑ **chmod** [**u/g/o**] [**+/-/=**] [**r/w/x**] [**file/folder**]

❑ **Examples:**

➤ **chmod u+x script.sh**

➤ **chmod go-w file.txt**

➤ **chmod u=rwx,g=rx,o=r myfile**



NUMERIC (OCTAL) METHOD

- ❑ **4 = Read, 2 = Write, 1 = Execute.**
- ❑ **Three digits: User, Group, Others.**
- ❑ **Examples:**
 - **chmod 755 file**
 - **chmod 644 file**



PRACTICAL EXAMPLES

- ❑ **Executable script:**

chmod +x script.sh

- ❑ **Secure a file:**

chmod 600 secret.txt

- ❑ **Shared folder:**

chmod 774 shared/



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The image shows a dual-pane window from a video recording. The left pane contains a terminal session where the user has run the 'neofetch' command. This command outputs ASCII art representing the user's profile ('SniperDZ') and various system statistics. The statistics include the operating system (Kali GNU/Linux Rolling), kernel version (5.15.167.4-microsoft-standard), uptime (20 seconds), installed packages (767 via dpkg), shell (bash 5.2.21), terminal emulator (Relay(11)), CPU model and speed (Intel i7-8650U at 2.111GHz), GPU information (dfc0:00:00.0 Microsoft Corporation), and memory usage (281MiB free / 7630MiB total). The right pane of the window displays a standard color calibration chart used for ensuring color accuracy in digital imaging.

<https://shorturl.at/J1m2Y>



UNDERSTANDING USER OWNERSHIP AND PERMISSIONS IN LINUX

❑ **chown changes file or directory owner and group in Linux.**

- **User**
- **Group**
- **Other**



UNDERSTANDING USER OWNERSHIP AND PERMISSIONS IN LINUX

```
-rwxr-xr-x 1 root root 0 May 24 07:14 TestingOutPermissions.txt
```



WHAT IS CHOWN?

❑ **chown newowner chownSample.txt Group**

```
root : bash — Konsole
root@kali:~# ls -l file1.txt
-rw-r--r-- 1 root root 12 Feb  4 12:04 file1.txt
root@kali:~# chown master file1.txt
root@kali:~# ls -l file1.txt
-rw-r--r-- 1 master root 12 Feb  4 12:04 file1.txt
root@kali:~#
```



BOOKS AND REFERENCES

