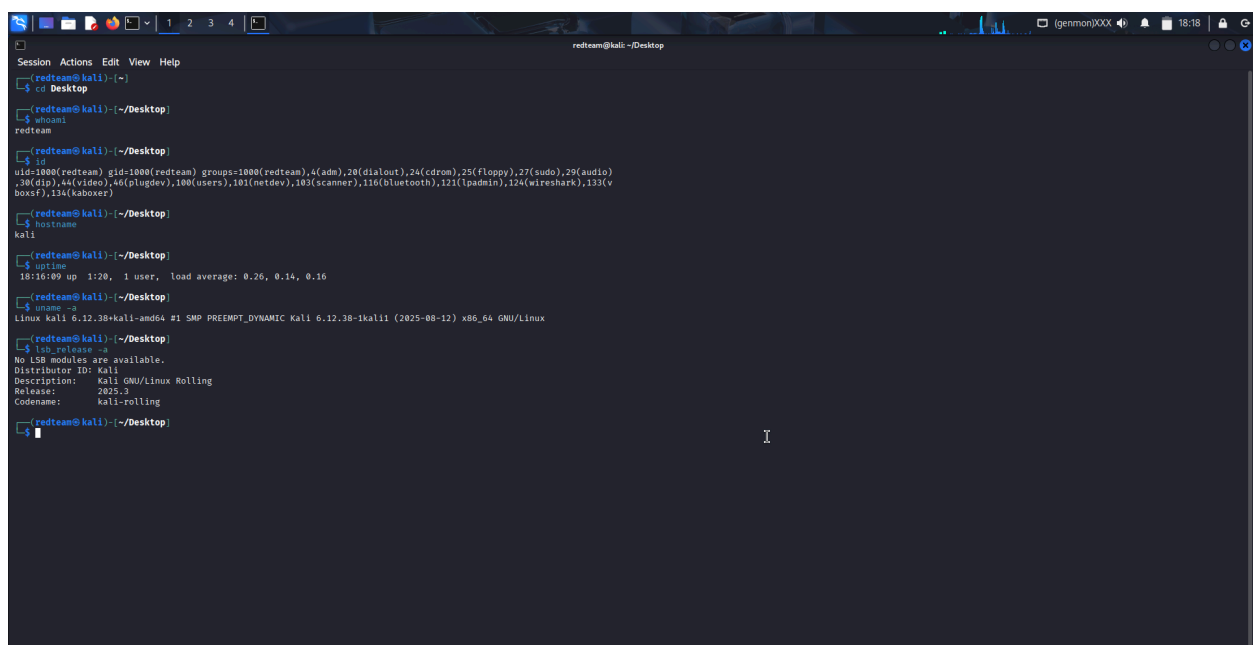# Linux Basic Commands – Project 2

In this project, I focused on mastering fundamental Linux commands essential for any cybersecurity professional. I structured the lab to cover **system info, file operations, process monitoring, networking, and search utilities**, demonstrating my ability to navigate, manage, and analyze Linux systems efficiently.

1. User & System Information

Commands like whoami, id, hostname, uname -a, and lsb_release -a were used to identify the current user, system distribution, kernel version, and host information. This ensures I can quickly understand any Linux environment, a crucial skill for troubleshooting and system audits.

2. File & Directory Navigation
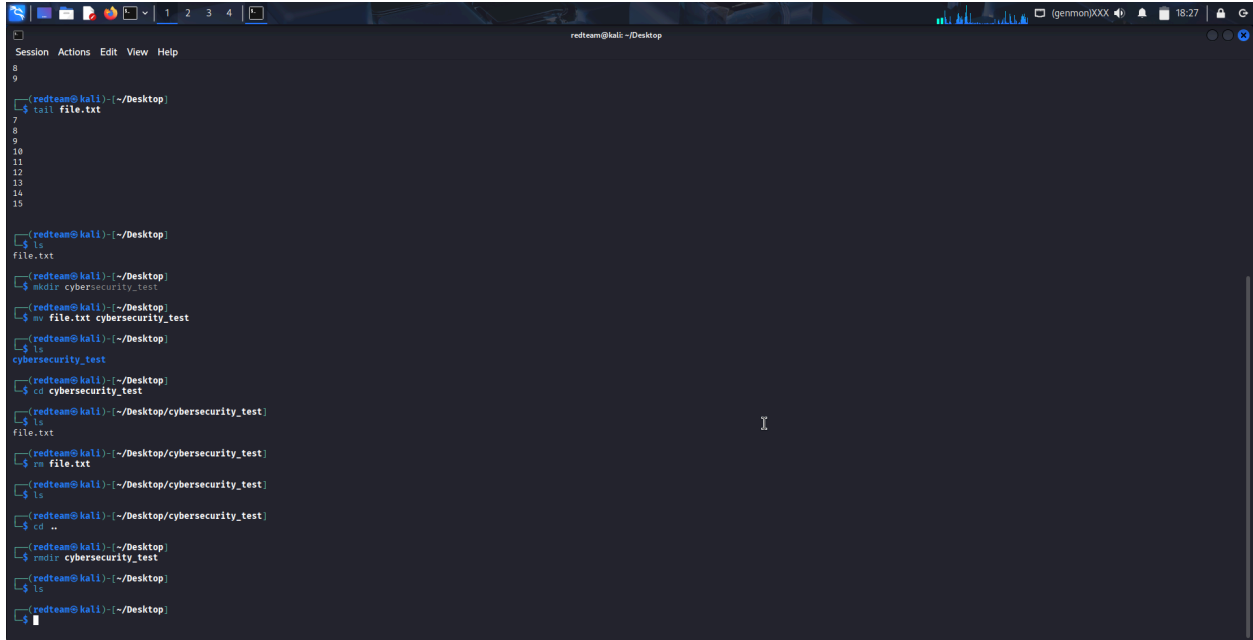
Commands such as `pwd`, `ls`, `cd`, `mkdir`, and `rmdir` were applied to navigate and manage directories. The `ls -l` and `ls -a` options allowed me to view detailed file information and hidden files. This demonstrates proficiency in organizing and exploring the filesystem.

3. File Operations

Using `touch`, `cat`, `head`, `tail`, `cp`, `mv`, and `rm`, I learned to create, view, copy, move, and delete files safely. These commands are foundational for scripting, backups, and file management in professional environments.

4. Searching & Pattern Matching with `grep`

I extended my skills with `grep` to filter and analyze text data:

- `grep "pattern" file` → Basic pattern search.

- `grep -i "pattern" file` → Case-insensitive search.

- `grep -v "pattern" file` → Excludes lines matching the pattern.

- `grep -c "pattern" file` → Counts the number of matching lines.

These variations allow quick analysis of logs, configuration files, and large datasets—key skills for penetration testing and system monitoring.

5. Permissions & Ownership

chmod, chown, and ls -l were used to manage file permissions and ownership. This demonstrates awareness of Linux security practices and the principle of least privilege.

6. Process & System Monitoring

Commands like `ps`, `top`, `free -h`, `df -h`, and `du -h` helped monitor system resources, processes, memory, and disk usage, showing readiness for performance analysis and troubleshooting.

```
top - 19:11:18 up  2:15,  1 user,  load average: 0.16, 0.26, 0.21
Tasks: 176 total,   1 running, 175 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  8.7 sy,  0.0 ni, 91.3 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   3921.9 total,   2056.7 free,    968.6 used,   1165.6 buff/cache
MiB Swap:   4093.0 total,   4093.0 free,      0.0 used.   2953.3 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
    710 root      20   0  448868 173348  76312 S   9.1   4.3   6:19.67 Xorg
   1039 redteam   20   0  887044 134484  91756 S   9.1   3.3   1:07.87 xfwm4
   3528 redteam   20   0  668252  83316  63312 S   9.1   2.1   0:34.07 qterminal
      1 root      20   0   23804  14768  10696 S   0.0   0.4   0:01.59 systemd
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.04 kthreadd
      3 root      20   0       0      0      0 S   0.0   0.0   0:00.00 pool_workqueue_release
      4 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-kvfree_rcu_reclaim
      5 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-rcu_gp
      6 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-sync_wq
      7 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-slub_flushwq
      8 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-netns
     12 root      20   0       0      0      0 I   0.0   0.0   0:00.00 kworker/u8:0-ipv6_addrconf
     13 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-mm_percpu_wq
     14 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
     15 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
     16 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
     17 root      20   0       0      0      0 S   0.0   0.0   0:00.58 ksoftirqd/0
     18 root      20   0       0      0      0 I   0.0   0.0   0:03.50 rcu_preempt
     19 root      20   0       0      0      0 S   0.0   0.0   0:00.00 rcu_exp_par_gp_kthread_worker/0
     20 root      20   0       0      0      0 S   0.0   0.0   0:00.06 rcu_exp_gp_kthread_worker
     21 root      rt   0       0      0      0 S   0.0   0.0   0:00.12 migration/0
     22 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/0
     23 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
     24 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/1
     25 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/1
     26 root      rt   0       0      0      0 S   0.0   0.0   0:00.80 migration/1
     27 root      20   0       0      0      0 S   0.0   0.0   0:01.33 ksoftirqd/1
     30 root      20   0       0      0      0 I   0.0   0.0   0:00.66 kworker/u9:0-flush-8:0
     34 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kdevtmpfs
     35 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-inet_frag_wq
     36 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kauditd
     37 root      20   0       0      0      0 S   0.0   0.0   0:00.04 khungtaskd
```

```
     30 root      20   0       0      0      0 I   0.0   0.0   0:00.66 kworker/u9:0-flush-8:0
     34 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kdevtmpfs
     35 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-inet_frag_wq
     36 root      20   0       0      0      0 I   0.0   0.0   0:00.00 kauditd
     37 root      20   0       0      0      0 S   0.0   0.0   0:00.04 khungtaskd
     38 root      20   0       0      0      0 S   0.0   0.0   0:00.00 oom_reaper
     40 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-writeback
     42 root      20   0       0      0      0 S   0.0   0.0   0:00.94 kcompactd0
     43 root      25   5       0      0      0 S   0.0   0.0   0:00.00 ksmd
     44 root      39  19       0      0      0 S   0.0   0.0   0:01.70 khugepaged
     45 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-kintegrityd
     46 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-kblockd
     47 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-blkcg_punt_bio
     48 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 irq/9-acpi
     50 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-tpm_dev_wq
     51 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-edac-poller
     52 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-devfreq_wq
     54 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kswapd0
     62 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-kthrotld
     66 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-acpi_thermal_pm
     67 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-mld

┌──(redteam㉿kali)-[~/Pictures]
└─$ free -h
               total        used        free      shared  buff/cache   available
Mem:           3.8Gi       942Mi       2.0Gi        24Mi       1.1Gi       2.9Gi
Swap:          4.0Gi          0B       4.0Gi

┌──(redteam㉿kali)-[~/Pictures]
└─$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            1.9G     0  1.9G   0% /dev
tmpfs           393M 1004K  392M   1% /run
/dev/sda1        75G   15G   56G  22% /
tmpfs           2.0G  4.0K  2.0G   1% /dev/shm
tmpfs           5.0M     0  5.0M   0% /run/lock
tmpfs           1.0M     0  1.0M   0% /run/credentials/systemd-journald.service
tmpfs           2.0G   56K  2.0G   1% /tmp
tmpfs           1.0M     0  1.0M   0% /run/credentials/getty@tty1.service
tmpfs           393M  132K  393M   1% /run/user/1000

┌──(redteam㉿kali)-[~/Pictures]
└─$ cd ..

┌──(redteam㉿kali)-[~]
└─$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos

┌──(redteam㉿kali)-[~]
└─$ du -h Desktop
8.0K    Desktop

┌──(redteam㉿kali)-[~]
└─$
```
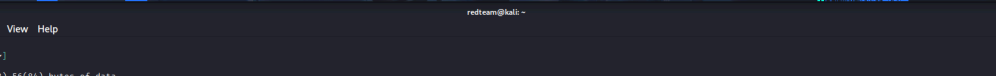
7. Networking & Connectivity

Using `ping`, `ip a`, and `ss -tuln`, I confirmed network connectivity, IP addresses, and listening services. This ensures foundational networking understanding for cybersecurity tasks. (I hide my ip for privacy concerns)

8. Package Management

Commands like `sudo apt update`, `sudo apt upgrade -y`, `sudo apt install`, and `sudo apt remove, purge` allowed me to manage software installations and updates—critical for maintaining secure, up-to-date environments.

Session Actions Edit View Help

```
The following packages were automatically installed and are no longer required:
  libbluray2  libgdata-common  libgeos3.13.1  libjs-underscore  libplacebo349  libqt5ct-common1.8  libsigsegv2    libsoup2.4-common  libtheoradec1  libudfread0  python3-packaging-whl
  libgdal36   libgdata22      libhdf4-0-alt    libogdi4.1       libportmidi0    libsframe1          libsoup-2.4-1  libtheora0     libtheoraenc1  libvpx9      python3-wheel-whl
Use 'sudo apt autoremove' to remove them.

Upgrading:
  adwaita-icon-theme  intel-microcode  libcgi-pm-perl  python3-asgiref  python3-rq  ruby-activesupport  yelp-xsl

Not upgrading:
  libpskc0t64  pipx  powershell-empire  python3-pyinstaller

Summary:
  Upgrading: 7, Installing: 0, Removing: 0, Not Upgrading: 4
  Download size: 12.8 MB
  Space needed: 26.6 kB / 59.5 GB available

Get:3 http://kali.darklab.sh/kali kali-rolling/main amd64 libcgi-pm-perl all 4.70-1 [217 kB]
Get:1 http://kali.download/kali kali-rolling/non-free-firmware amd64 intel-microcode amd64 3.20250812.1 [11.5 MB]
Get:2 http://kali.download/kali kali-rolling/main amd64 adwaita-icon-theme all 49.0-1 [507 kB]
Get:4 http://kali.download/kali kali-rolling/main amd64 python3-asgiref all 3.9.1-2 [29.3 kB]
Get:5 http://kali.download/kali kali-rolling/main amd64 python3-rq all 2.6-1 [99.1 kB]
Get:6 http://http.kali.org/kali kali-rolling/main amd64 ruby-activesupport all 2:7.2.2.2+dfsg-1 [223 kB]
Get:7 http://kali.download/kali kali-rolling/main amd64 yelp-xsl all 49.0-1 [206 kB]
Fetched 12.8 MB in 1min 46s (121 kB/s)
(Reading database ... 419817 files and directories currently installed.)
Preparing to unpack .../0-intel-microcode_3.20250812.1_amd64.deb ...
Unpacking intel-microcode (3.20250812.1) over (3.20250512.1) ...
Preparing to unpack .../1-adwaita-icon-theme_49.0-1_all.deb ...
Unpacking adwaita-icon-theme (49.0-1) over (49-rc-1) ...
Preparing to unpack .../2-libcgi-pm-perl_4.70-1_all.deb ...
Unpacking libcgi-pm-perl (4.70-1) over (4.68-1) ...
Preparing to unpack .../3-python3-asgiref_3.9.1-2_all.deb ...
Unpacking python3-asgiref (3.9.1-2) over (3.8.1-1) ...
Preparing to unpack .../4-python3-rq_2.6-1_all.deb ...
Unpacking python3-rq (2.6-1) over (2.5-1) ...
Preparing to unpack .../5-ruby-activesupport_2%3a7.2.2.2+dfsg-1_all.deb ...
Unpacking ruby-activesupport (2:7.2.2.2+dfsg-1) over (2:7.2.2.1+dfsg-7) ...
Preparing to unpack .../6-yelp-xsl_49.0-1_all.deb ...
Unpacking yelp-xsl (49.0-1) over (49-beta-1) ...
Setting up intel-microcode (3.20250812.1) ...
intel-microcode: microcode will be updated at next boot
Setting up ruby-activesupport (2:7.2.2.2+dfsg-1) ...
Setting up libcgi-pm-perl (4.70-1) ...
Setting up python3-rq (2.6-1) ...
Setting up adwaita-icon-theme (49.0-1) ...
Setting up yelp-xsl (49.0-1) ...
Setting up python3-asgiref (3.9.1-2) ...
Processing triggers for man-db (2.13.1-1) ...
Processing triggers for kali-menu (2025.4.0) ...
Processing triggers for initramfs-tools (0.148.3) ...
update-initramfs: Generating /boot/initrd.img-6.12.38+kali-amd64
  ┌──(redteam@kali)-[~]
  └─$
```

Session Actions Edit View Help

```
  └─$ sudo apt install pluma
The following packages were automatically installed and are no longer required:
  libbluray2  libgdata-common  libgeos3.13.1  libjs-underscore  libplacebo349  libqt5ct-common1.8  libsigsegv2    libsoup2.4-common  libtheoradec1  libudfread0  python3-packaging-whl
  libgdal36   libgdata22      libhdf4-0-alt    libogdi4.1       libportmidi0    libsframe1          libsoup-2.4-1  libtheora0     libtheoraenc1  libvpx9      python3-wheel-whl
Use 'sudo apt autoremove' to remove them.

Installing:
  pluma

Installing dependencies:
  gir1.2-gtksource-4  gir1.2-peas-1.0  gir1.2-pluma-1.0  libadwaita-1-0  libappstream5  libpeas-1.0-0  libpeas-common  libstemmer0d  libxmlb2  mate-desktop-common  pluma-common  zenity  zenity-common

Summary:
  Upgrading: 0, Installing: 14, Removing: 0, Not Upgrading: 4
  Download size: 6,814 kB
  Space needed: 46.6 MB / 59.5 GB available

Continue? [Y/n] Y
Get:1 http://kali.download/kali kali-rolling/main amd64 gir1.2-gtksource-4 amd64 4.8.4-7 [20.2 kB]
Get:13 http://kali.darklab.sh/kali kali-rolling/main amd64 zenity-common all 4.1.99-1 [2,672 kB]
Get:9 http://mirrors.ocf.berkeley.edu/kali kali-rolling/main amd64 libadwaita-1-0 amd64 1.7.6-1kali1 [543 kB]
Get:2 http://kali.download/kali kali-rolling/main amd64 libpeas-common all 1.36.0-5 [50.4 kB]
Get:3 http://kali.download/kali kali-rolling/main amd64 libpeas-1.0-0 amd64 1.36.0-5 [60.9 kB]
Get:4 http://kali.download/kali kali-rolling/main amd64 gir1.2-peas-1.0 amd64 1.36.0-5 [8,276 B]
Get:5 http://http.kali.org/kali kali-rolling/main amd64 gir1.2-pluma-1.0 amd64 1.26.1-2.1+b1 [30.3 kB]
Get:6 http://kali.download/kali kali-rolling/main amd64 libstemmer0d amd64 3.0.1-1 [131 kB]
Get:7 http://kali.download/kali kali-rolling/main amd64 libxmlb2 amd64 0.3.23-1 [63.1 kB]
Get:8 http://kali.download/kali kali-rolling/main amd64 libappstream5 amd64 1.0.6-1 [227 kB]
Get:10 http://kali.download/kali kali-rolling/main amd64 mate-desktop-common all 1.26.2-1.2 [508 kB]
Get:11 http://kali.download/kali kali-rolling/main amd64 pluma-common all 1.26.1-2.1 [2,022 kB]
Get:14 http://http.kali.org/kali kali-rolling/main amd64 pluma amd64 1.26.1-2.1+b1 [405 kB]
Get:14 http://kali.download/kali kali-rolling/main amd64 zenity amd64 4.1.99-1 [74.3 kB]
Fetched 6,814 kB in 1min 42s (67.0 kB/s)                           s                                                                            26.7 kB/s 14s
Selecting previously unselected package gir1.2-gtksource-4:amd64.
(Reading database ... 419818 files and directories currently installed.)
Preparing to unpack .../00-gir1.2-gtksource-4_4.8.4-7_amd64.deb ...
Unpacking gir1.2-gtksource-4:amd64 (4.8.4-7) ...
Selecting previously unselected package libpeas-common.
Preparing to unpack .../01-libpeas-common_1.36.0-5_all.deb ...
Unpacking libpeas-common (1.36.0-5) ...
Selecting previously unselected package libpeas-1.0-0:amd64.
Preparing to unpack .../02-libpeas-1.0-0_1.36.0-5_amd64.deb ...
Unpacking libpeas-1.0-0:amd64 (1.36.0-5) ...
Selecting previously unselected package gir1.2-peas-1.0:amd64.
Preparing to unpack .../03-gir1.2-peas-1.0_1.36.0-5_amd64.deb ...
Unpacking gir1.2-peas-1.0:amd64 (1.36.0-5) ...
Selecting previously unselected package gir1.2-pluma-1.0.
Preparing to unpack .../04-gir1.2-pluma-1.0_1.26.1-2.1+b1_amd64.deb ...
Unpacking gir1.2-pluma-1.0 (1.26.1-2.1+b1) ...
Selecting previously unselected package libstemmer0d:amd64.
Preparing to unpack .../05-libstemmer0d_3.0.1-1_amd64.deb ...
Unpacking libstemmer0d:amd64 (3.0.1-1) ...
Selecting previously unselected package libxmlb2:amd64.
Preparing to unpack .../06-libxmlb2_0.3.23-1_amd64.deb ...
Unpacking libxmlb2:amd64 (0.3.23-1) ...
```

```
Setting up libpeas-1.0-0:amd64 (1.36.0-5) ...
Setting up pluma-common (1.26.1-2.1) ...
Setting up libstemmer0d:amd64 (3.0.1-1) ...
Setting up libappstream5:amd64 (1.0.6-1) ...
Setting up libadwaita-1-0:amd64 (1.7.6-1kali1) ...
Setting up zenity (4.1.99-1) ...
Setting up gir1.2-peas-1.0:amd64 (1.36.0-5) ...
Processing triggers for man-db (2.13.1-1) ...
Processing triggers for libglib2.0-0t64:amd64 (2.84.4-3) ...
Processing triggers for kali-menu (2025.4.0) ...
Processing triggers for desktop-file-utils (0.28-1) ...
Processing triggers for hicolor-icon-theme (0.18-2) ...
Processing triggers for libc-bin (2.41-12) ...
Setting up pluma (1.26.1-2.1+b1) ...

┌──(redteam㉿kali)-[~]
└─$ sudo apt purge pluma
The following packages were automatically installed and are no longer required:
  gir1.2-gtksource-4  libgdata-common   libpeas-common      libsoup2.4-common  libxmlb2
  gir1.2-peas-1.0     libgdata22        libplacebo349       libstemmer0d       mate-desktop-common
  gir1.2-pluma-1.0    libgeos3.13.1     libportmidi0        libtheora0         pluma-common
  libadwaita-1-0      libhdf4-0-alt     libqt5ct-common1.8  libtheoradec1      python3-packaging-whl
  libappstream5       libjs-underscore  libsframe1          libtheoraenc1      python3-wheel-whl
  libbluray2          libogdi4.1        libsigsegv2         libudfread0        zenity
  libgdal36           libpeas-1.0-0     libsoup-2.4-1       libvpx9            zenity-common
Use 'sudo apt autoremove' to remove them.

REMOVING:
  pluma*

Summary:
  Upgrading: 0, Installing: 0, Removing: 1, Not Upgrading: 4
  Freed space: 1,588 kB

Continue? [Y/n] y
(Reading database ... 422021 files and directories currently installed.)
Removing pluma (1.26.1-2.1+b1) ...
Processing triggers for desktop-file-utils (0.28-1) ...
Processing triggers for man-db (2.13.1-1) ...
Processing triggers for kali-menu (2025.4.0) ...

┌──(redteam㉿kali)-[~]
└─$ sudo apt purge pluma
Package 'pluma' is not installed, so not removed
The following packages were automatically installed and are no longer required:
  gir1.2-gtksource-4  libadwaita-1-0  libgdal36       libgeos3.13.1     libogdi4.1        libplacebo349  libsframe1    libsoup2.4-common  libtheoradec1  libvpx9  pluma-common           zenity
  gir1.2-peas-1.0     libappstream5   libgdata-common  libhdf4-0-alt    libpeas-1.0-0     libportmidi0   libsigsegv2   libstemmer0d       libtheoraenc1  libxmlb2  python3-packaging-whl  zenity-common
  gir1.2-pluma-1.0    libbluray2      libgdata22       libjs-underscore  libpeas-common  libqt5ct-common1.8  libsoup-2.4-1  libtheora0         libudfread0    mate-desktop-common  python3-wheel-whl
Use 'sudo apt autoremove' to remove them.

Summary:
  Upgrading: 0, Installing: 0, Removing: 0, Not Upgrading: 4

┌──(redteam㉿kali)-[~]
└─$
```