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**SmartBridge Externship Program in Cyber Security and
Ethical Hacking**

Week 1 Assignment

File and Directory Operations:

ls: List files and directories

cd: Change directory

pwd: Print working directory

mkdir: Make directory

touch: Create an empty file

cp: Copy files and directories

mv: Move or rename files and directories

rm: Remove files and directories

find: Search for files and directories

```
kali@kali: ~/Downloads
File Actions Edit View Help

(kali@kali)-[~]
$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos

(kali@kali)-[~]
$ cd Downloads

(kali@kali)-[~/Downloads]
$ pwd
/home/kali/Downloads

(kali@kali)-[~/Downloads]
$ mkdir test

(kali@kali)-[~/Downloads]
$ ls
test

(kali@kali)-[~/Downloads]
$
```

```
kali@kali: ~/Downloads
File Actions Edit View Help

(kali@kali)-[~/Downloads]
$ ls
test

(kali@kali)-[~/Downloads]
$ touch testFile

(kali@kali)-[~/Downloads]
$ ls
test testFile

(kali@kali)-[~/Downloads]
$ cp test
cp: missing destination file operand after 'test'
Try 'cp --help' for more information.

(kali@kali)-[~/Downloads]
$ cp testFile file2

(kali@kali)-[~/Downloads]
$ ls
file2 test testFile
```

```
kali@kali: ~/Downloads
File Actions Edit View Help

(kali@kali)-[~/Downloads]
$ mv testFileName /Documents
mv: cannot move 'testFileName' to '/Documents': Permission denied

(kali@kali)-[~/Downloads]
$ sudo mv testFileName /Documents

(kali@kali)-[~/Downloads]
$ ls
test

(kali@kali)-[~/Downloads]
$ rm test
rm: cannot remove 'test': Is a directory

(kali@kali)-[~/Downloads]
$ touch fileName

(kali@kali)-[~/Downloads]
$ rm fileName

(kali@kali)-[~/Downloads]
$ find testFile
find: 'testFile': No such file or directory

(kali@kali)-[~/Downloads]
$
```

File Viewing and Editing:

cat: Concatenate and display file content

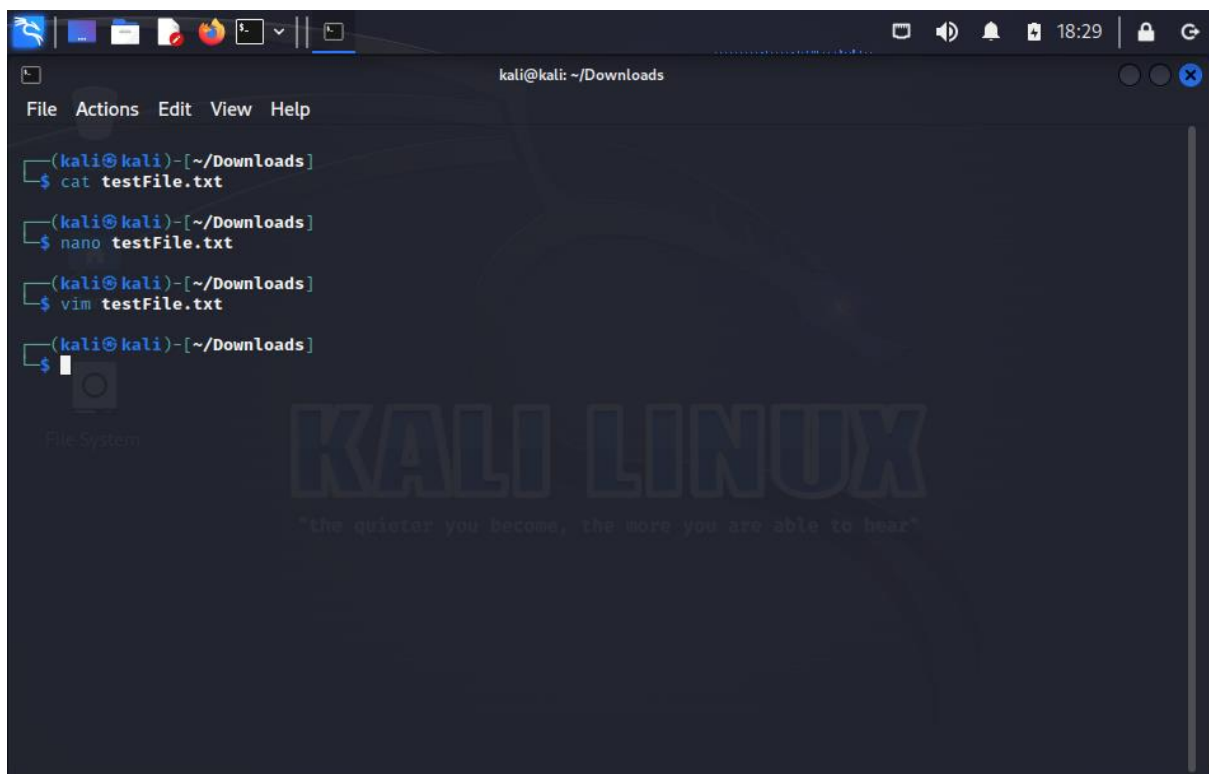
less: View file content with pagination

head: Display the beginning of a file

tail: Display the end of a file

nano: Text editor for creating and editing files

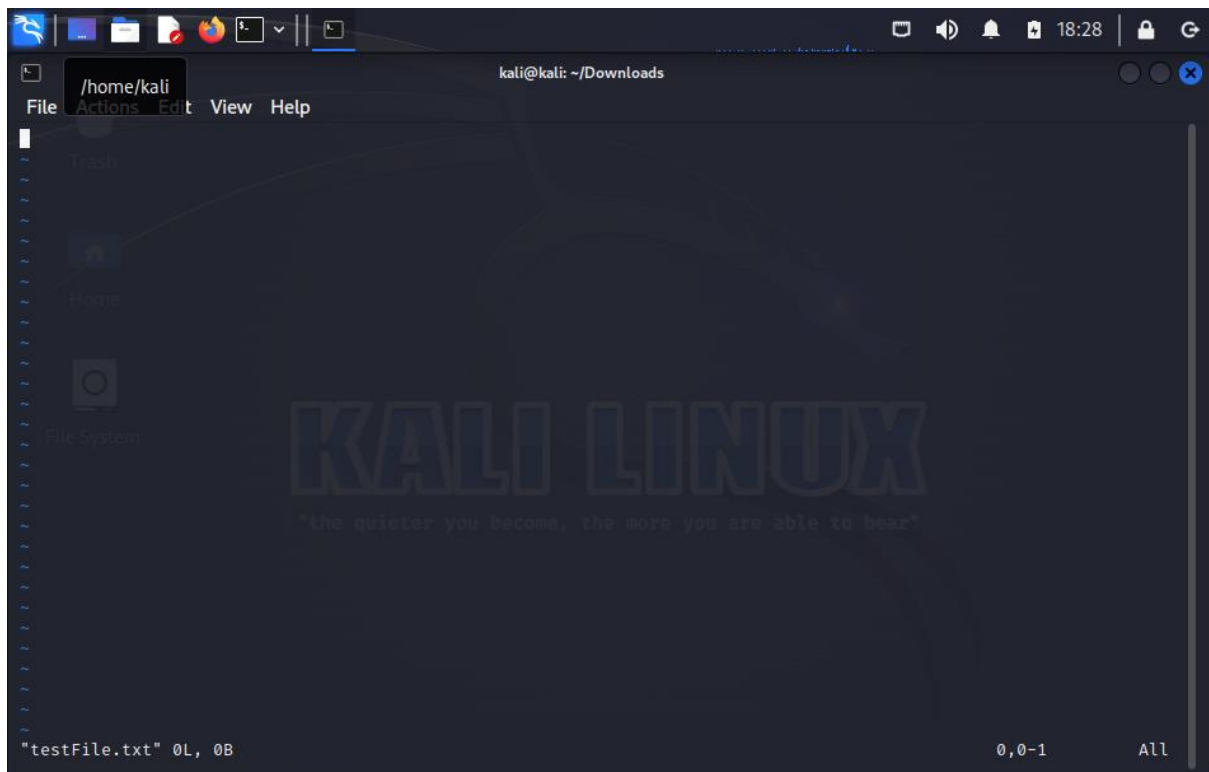
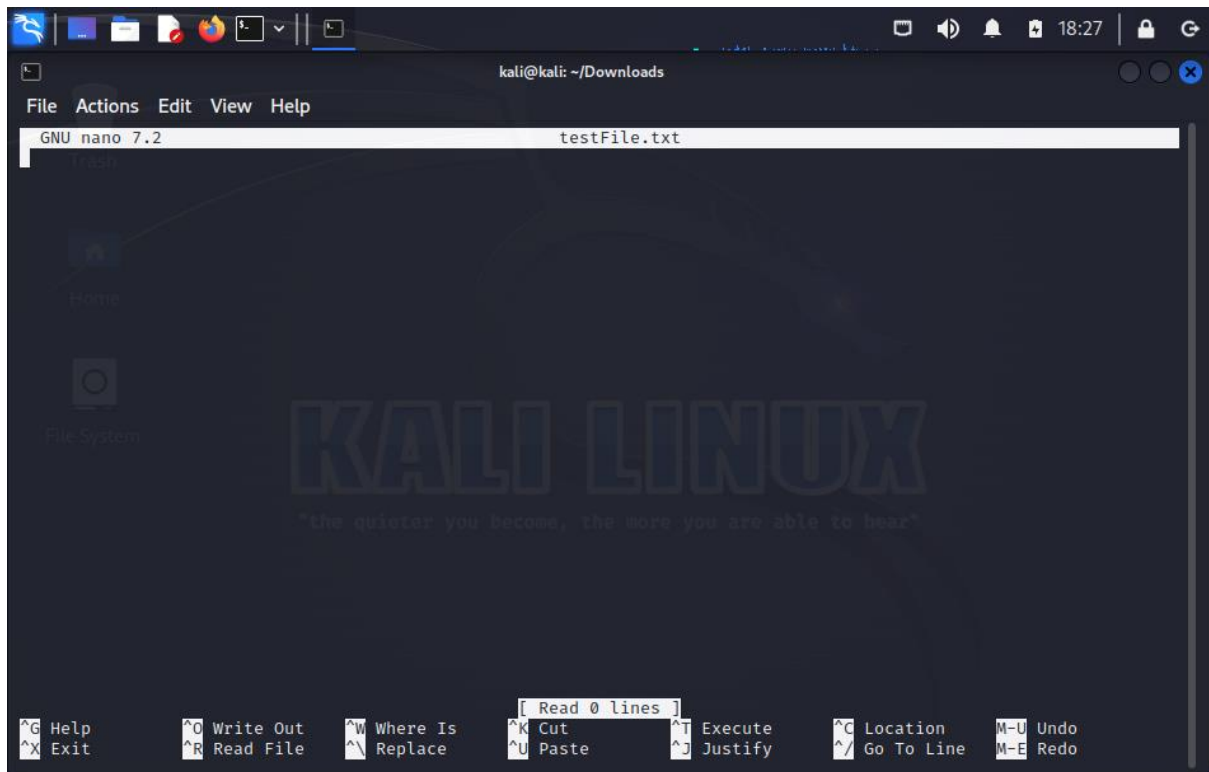
vi/vim: Powerful text editor for experienced users



The screenshot shows a Kali Linux terminal window with the title bar 'kali@kali: ~/Downloads'. The terminal displays a series of commands and their outputs:

```
File Actions Edit View Help
(kali@kali)-[~/Downloads]
$ cat testFile.txt
(kali@kali)-[~/Downloads]
$ nano testFile.txt
(kali@kali)-[~/Downloads]
$ vim testFile.txt
(kali@kali)-[~/Downloads]
$
```

The terminal background features a large, semi-transparent 'KALI LINUX' logo and the quote 'the quieter you become, the more you are able to hear'.

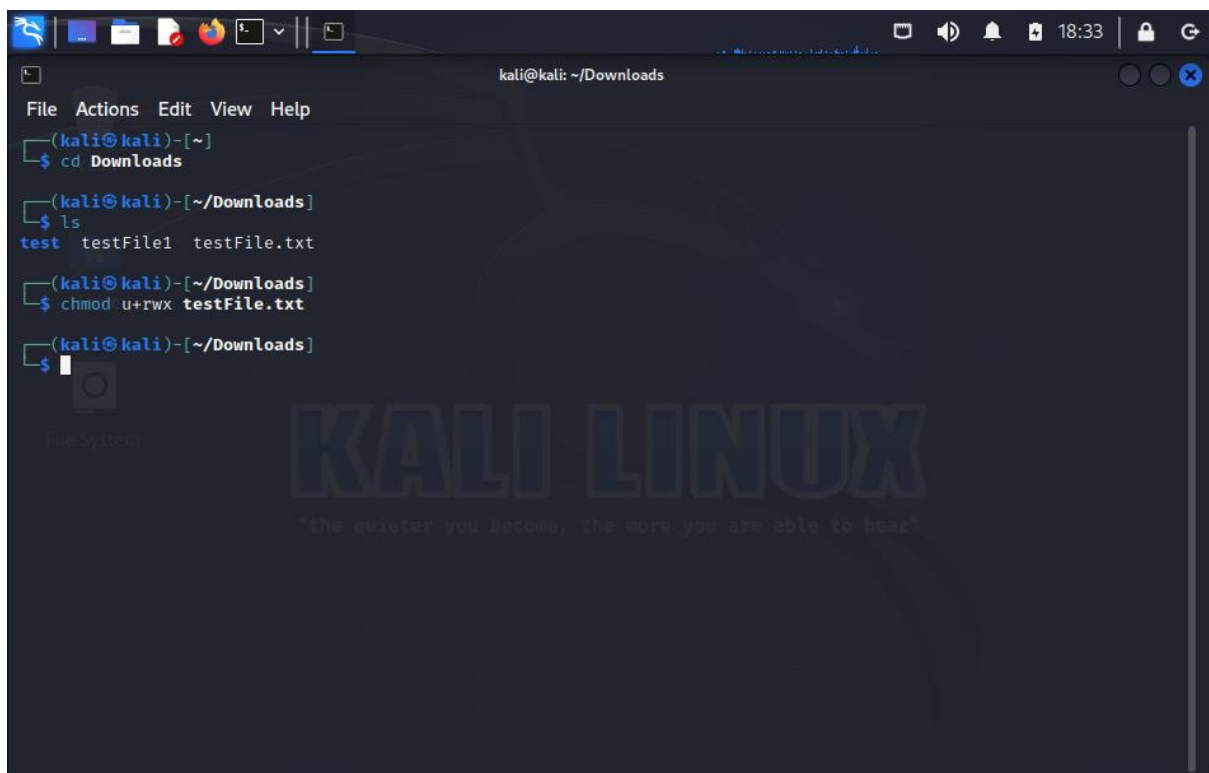


File Permissions:

chmod: Change file permissions

chown: Change file owner

chgrp: Change file group



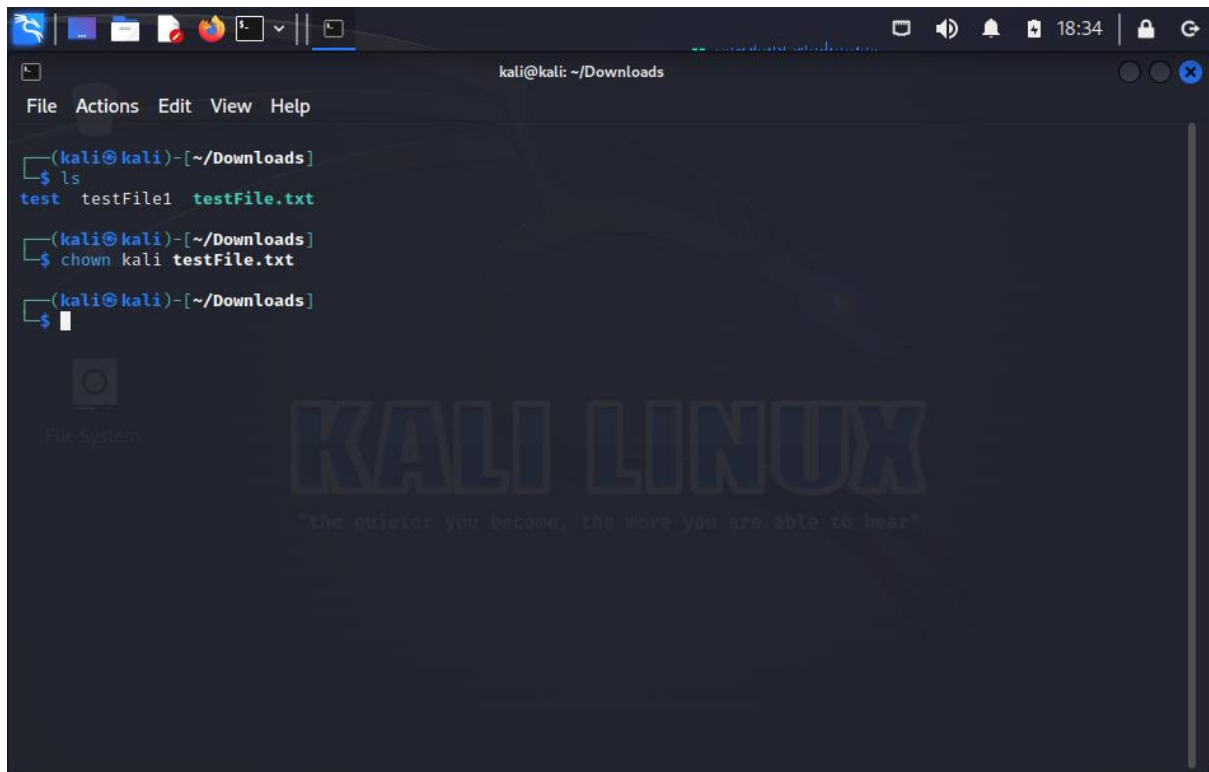
A terminal window titled 'kali@kali: ~/Downloads' is shown. The window has a menu bar with 'File', 'Actions', 'Edit', 'View', and 'Help'. The terminal output shows the following commands and their results:

```
(kali@kali)-[~]  
$ cd Downloads  
  
(kali@kali)-[~/Downloads]  
$ ls  
test testFile1 testFile.txt  
  
(kali@kali)-[~/Downloads]  
$ chmod u+rw testFile.txt  
  
(kali@kali)-[~/Downloads]  
$
```

The terminal background features a large, faint 'KALI LINUX' logo and the quote 'the quieter you become, the more you are able to hear'.

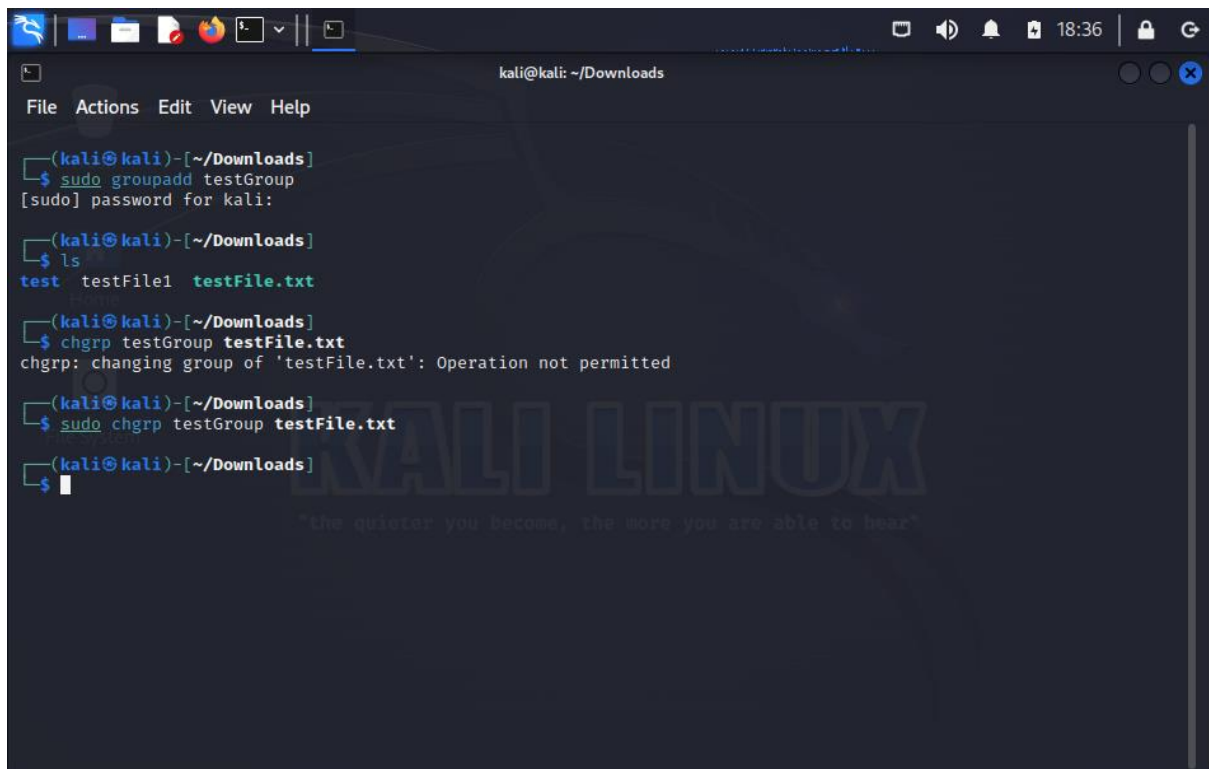
```
kali@kali: ~/Downloads
File Actions Edit View Help

(kali@kali)-[~/Downloads]
$ ls
test testFile1 testFile.txt
(kali@kali)-[~/Downloads]
$ chown kali testFile.txt
(kali@kali)-[~/Downloads]
$
```



```
kali@kali: ~/Downloads
File Actions Edit View Help

(kali@kali)-[~/Downloads]
$ sudo groupadd testGroup
[sudo] password for kali:
(kali@kali)-[~/Downloads]
$ ls
test testFile1 testFile.txt
(kali@kali)-[~/Downloads]
$ chgrp testGroup testFile.txt
chgrp: changing group of 'testFile.txt': Operation not permitted
(kali@kali)-[~/Downloads]
$ sudo chgrp testGroup testFile.txt
(kali@kali)-[~/Downloads]
$
```

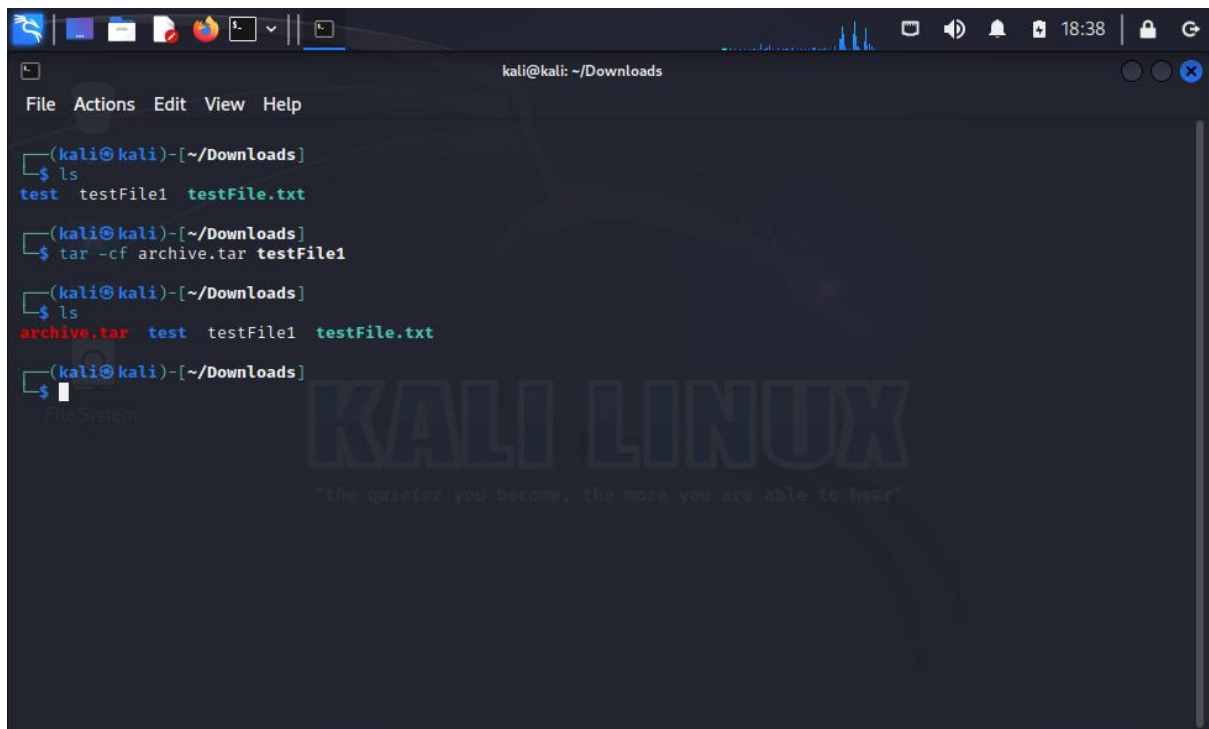


File Compression and Archiving:

tar: Archive files

gzip: Compress files

unzip: Extract files from a ZIP archive

A terminal window titled 'kali@kali: ~/Downloads' with a menu bar (File, Actions, Edit, View, Help) and a toolbar. The terminal shows a sequence of commands and their outputs. First, 'ls' is run, showing 'testFile1' and 'testFile.txt'. Then, 'tar -cf archive.tar testFile1' is run. Finally, 'ls' is run again, showing 'archive.tar', 'test', 'testFile1', and 'testFile.txt'. A large 'KALI LINUX' watermark is visible in the background.

```
(kali@kali)-[~/Downloads]
$ ls
testFile1  testFile.txt

(kali@kali)-[~/Downloads]
$ tar -cf archive.tar testFile1

(kali@kali)-[~/Downloads]
$ ls
archive.tar  test  testFile1  testFile.txt

(kali@kali)-[~/Downloads]
$
```



```
kali@kali: ~/Downloads
File Actions Edit View Help

(kali@kali)-[~/Downloads]
$ ls
archive.tar test testFile1 testFile.txt

(kali@kali)-[~/Downloads]
$ zip compressed.zip testFile.txt
adding: testFile.txt (stored 0%)

(kali@kali)-[~/Downloads]
$ ls
archive.tar compressed.zip test testFile1 testFile.txt

(kali@kali)-[~/Downloads]
$
```

```
kali@kali: ~/Downloads
File Actions Edit View Help

(kali@kali)-[~/Downloads]
$ ls
archive.tar compressed.zip test testFile1 testFile.txt

(kali@kali)-[~/Downloads]
$ unzip compressed.zip
Archive: compressed.zip
replace testFile.txt? [y]es, [n]o, [A]ll, [N]one, [r]ename: r
new name: newFileName.txt
extracting: newFileName.txt

(kali@kali)-[~/Downloads]
$ ls
archive.tar compressed.zip newFileName.txt test testFile1 testFile.txt

(kali@kali)-[~/Downloads]
$
```

Process Management:

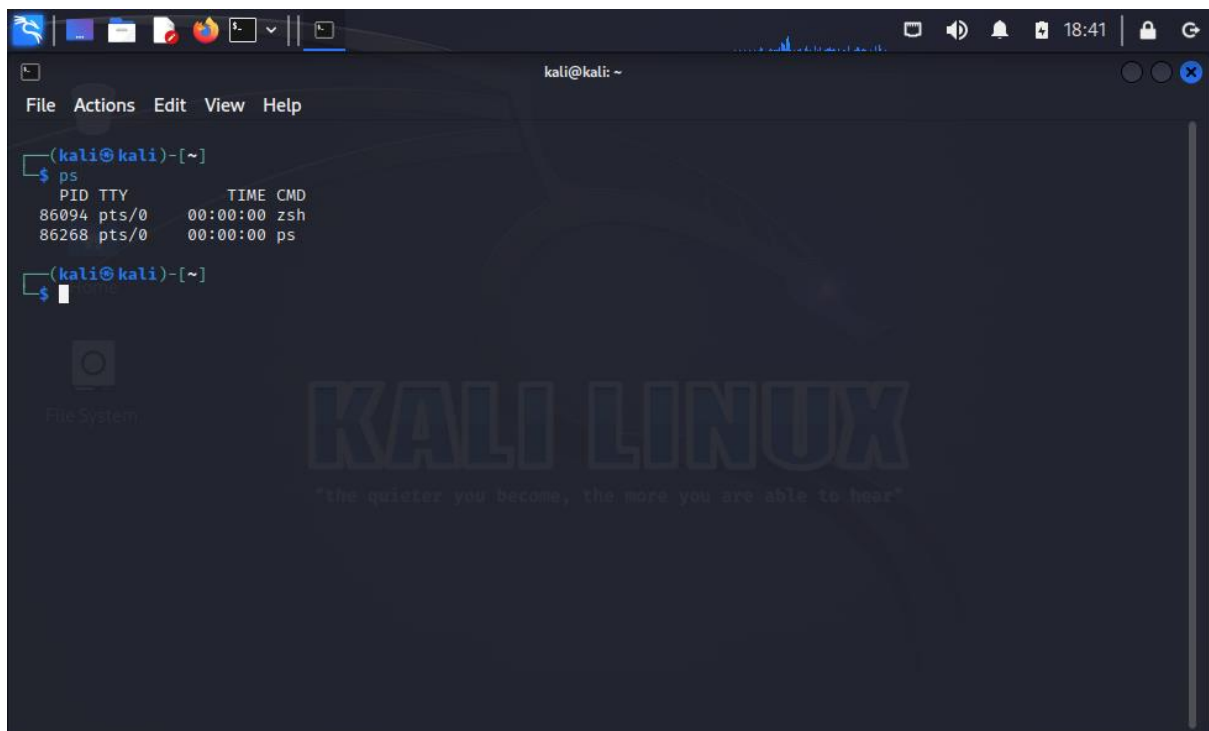
ps: List running processes

top: Display real-time system information and processes

kill: Terminate processes

bg: Run processes in the background

fg: Bring background processes to the foreground



The screenshot shows a Kali Linux terminal window with a dark theme. The window title is 'kali@kali: ~'. The terminal output for the 'ps' command is as follows:

```
(kali@kali)-[~]  
$ ps  
  PID TTY          TIME CMD  
 86094 pts/0    00:00:00 zsh  
 86268 pts/0    00:00:00 ps
```

The terminal also displays the Kali Linux logo and the slogan "the quieter you become, the more you are able to hear" in the background.

```
kali@kali: ~  
File Actions Edit View Help  
top - 18:42:30 up 3:16, 1 user, load average: 0.07, 0.12, 0.10  
Tasks: 157 total, 1 running, 155 sleeping, 0 stopped, 1 zombie  
%Cpu(s): 0.7 us, 2.1 sy, 0.0 ni, 97.2 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st  
MiB Mem : 3920.4 total, 2726.8 free, 946.0 used, 480.1 buff/cache  
MiB Swap: 1024.0 total, 1024.0 free, 0.0 used, 2974.4 avail Mem  


| PID   | USER | PR | NI  | VIRT    | RES    | SHR   | S | %CPU | %MEM | TIME+   | COMMAND                 |
|-------|------|----|-----|---------|--------|-------|---|------|------|---------|-------------------------|
| 607   | root | 20 | 0   | 445380  | 152260 | 67188 | S | 8.3  | 3.8  | 1:28.90 | Xorg                    |
| 86091 | kali | 20 | 0   | 440804  | 106436 | 85208 | S | 2.7  | 2.7  | 0:00.66 | qterminal               |
| 814   | root | 20 | 0   | 0       | 0      | 0     | I | 0.3  | 0.0  | 0:06.92 | kworker/2:0-events      |
| 980   | kali | 20 | 0   | 217956  | 2376   | 2028  | S | 0.3  | 0.1  | 0:35.07 | VBoxClient              |
| 1040  | kali | 20 | 0   | 1093060 | 115560 | 78972 | S | 0.3  | 2.9  | 0:27.75 | xfwm4                   |
| 1076  | kali | 20 | 0   | 402016  | 49096  | 35224 | S | 0.3  | 1.2  | 0:03.87 | xfce4-panel             |
| 1085  | kali | 20 | 0   | 496432  | 125224 | 46788 | S | 0.3  | 3.1  | 0:12.98 | xfdesktop               |
| 1091  | kali | 20 | 0   | 355620  | 42520  | 20064 | S | 0.3  | 1.1  | 0:17.52 | panel-13-cpugra         |
| 1     | root | 20 | 0   | 167644  | 12140  | 9004  | S | 0.0  | 0.3  | 0:01.28 | systemd                 |
| 2     | root | 20 | 0   | 0       | 0      | 0     | S | 0.0  | 0.0  | 0:00.12 | kthreadd                |
| 3     | root | 0  | -20 | 0       | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | rcu_gp                  |
| 4     | root | 0  | -20 | 0       | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | rcu_par_gp              |
| 5     | root | 0  | -20 | 0       | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | slub_flushwq            |
| 6     | root | 0  | -20 | 0       | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | netns                   |
| 10    | root | 0  | -20 | 0       | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | mm_percpu_wq            |
| 11    | root | 20 | 0   | 0       | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | rcu_tasks_kthread       |
| 12    | root | 20 | 0   | 0       | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | rcu_tasks_rude_kthread  |
| 13    | root | 20 | 0   | 0       | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | rcu_tasks_trace_kthread |
| 14    | root | 20 | 0   | 0       | 0      | 0     | S | 0.0  | 0.0  | 0:00.19 | ksoftirqd/0             |
| 15    | root | 20 | 0   | 0       | 0      | 0     | I | 0.0  | 0.0  | 0:05.14 | rcu_preempt             |
| 16    | root | rt | 0   | 0       | 0      | 0     | S | 0.0  | 0.0  | 0:00.28 | migration/0             |
| 18    | root | 20 | 0   | 0       | 0      | 0     | S | 0.0  | 0.0  | 0:00.00 | cpuhp/0                 |
| 19    | root | 20 | 0   | 0       | 0      | 0     | S | 0.0  | 0.0  | 0:00.00 | cpuhp/1                 |


```

```
kali@kali: ~  
File Actions Edit View Help  
(kali@kali)~  
$ ps  
PID TTY TIME CMD  
86094 pts/0 00:00:00 zsh  
87467 pts/0 00:00:00 ps  
(kali@kali)~  
$ kill 86094  
(kali@kali)~  
$
```

System Information:

uname: Print system information


df: Display disk space usage

free: Display memory usage

uptime: Show system uptime

who: Display logged-in users

w: Display logged-in users and their activities



```
(kali@kali)-[~]
$ uname
Linux

(kali@kali)-[~]
$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
udev             1966708         0   1966708    0% /dev
tmpfs             401456         952    400504    1% /run
/dev/sda1      82083148 13791940 64075660   18% /
tmpfs            2007264         0   2007264    0% /dev/shm
tmpfs              5120         0        5120    0% /run/lock
tmpfs            401452         80    401372    1% /run/user/1000

(kali@kali)-[~]
$ free
              total        used        free      shared  buff/cache   available
Mem:           4014532      1307564      2233344        27916       722644      2706968
Swap:           1048572           0      1048572

(kali@kali)-[~]
$ uptime
18:44:57 up 3:19, 1 user, load average: 0.28, 0.22, 0.14

(kali@kali)-[~]
$ who
kali    tty7        2023-05-28 12:39 (:0)

(kali@kali)-[~]
$ w
18:45:00 up 3:19, 1 user, load average: 0.26, 0.22, 0.14
USER    TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
kali    tty7        :0            12:39    6:25m  1:35   1.53s xfce4-session

(kali@kali)-[~]
$
```

Networking:

ifconfig: Configure network interfaces

ping: Send ICMP echo requests to a network host

ssh: Securely connect to a remote system

scp: Securely copy files between systems

wget: Download files from the web



```
(kali@kali)-[~]
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::2eaa:40bc:97a6:20e1 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:c7:e1:36 txqueuelen 1000 (Ethernet)
    RX packets 9862 bytes 13474846 (12.8 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 3721 bytes 278760 (272.2 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 4 bytes 240 (240.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4 bytes 240 (240.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

(kali@kali)-[~]
$ ping google.com
PING google.com (142.250.199.142) 56(84) bytes of data:
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=1 ttl=111 time=41.3 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=2 ttl=111 time=41.1 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=3 ttl=111 time=38.6 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=4 ttl=111 time=38.3 ms
64 bytes from bom07s36-in-f14.1e100.net (142.250.199.142): icmp_seq=5 ttl=111 time=40.1 ms
^C
--- google.com ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4005ms
rtt min/avg/max/mdev = 38.251/39.879/41.317/1.254 ms

(kali@kali)-[~]
$
```

```
kali@kali: ~  
File Actions Edit View Help  
  
(kali@kali)-[~]  
$ wget google.com  
--2023-05-28 18:47:03-- http://google.com/  
Resolving google.com (google.com)... 142.250.183.78, 2404:6800:4009:822::200e  
Connecting to google.com (google.com)|142.250.183.78|:80... connected.  
HTTP request sent, awaiting response... 301 Moved Permanently  
Location: http://www.google.com/ [following]  
--2023-05-28 18:47:03-- http://www.google.com/  
Resolving www.google.com (www.google.com)... 142.250.192.132, 2404:6800:4009:82b::2004  
Connecting to www.google.com (www.google.com)|142.250.192.132|:80... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: unspecified [text/html]  
Saving to: 'index.html'  
  
index.html [====>] 19.04K --.-KB/s in 0.03s  
2023-05-28 18:47:04 (599 KB/s) - 'index.html' saved [19499]  
  
(kali@kali)-[~]  
$
```

System Administration:

sudo: Execute commands with superuser privileges

apt-get: Package management for Debian-based distributions

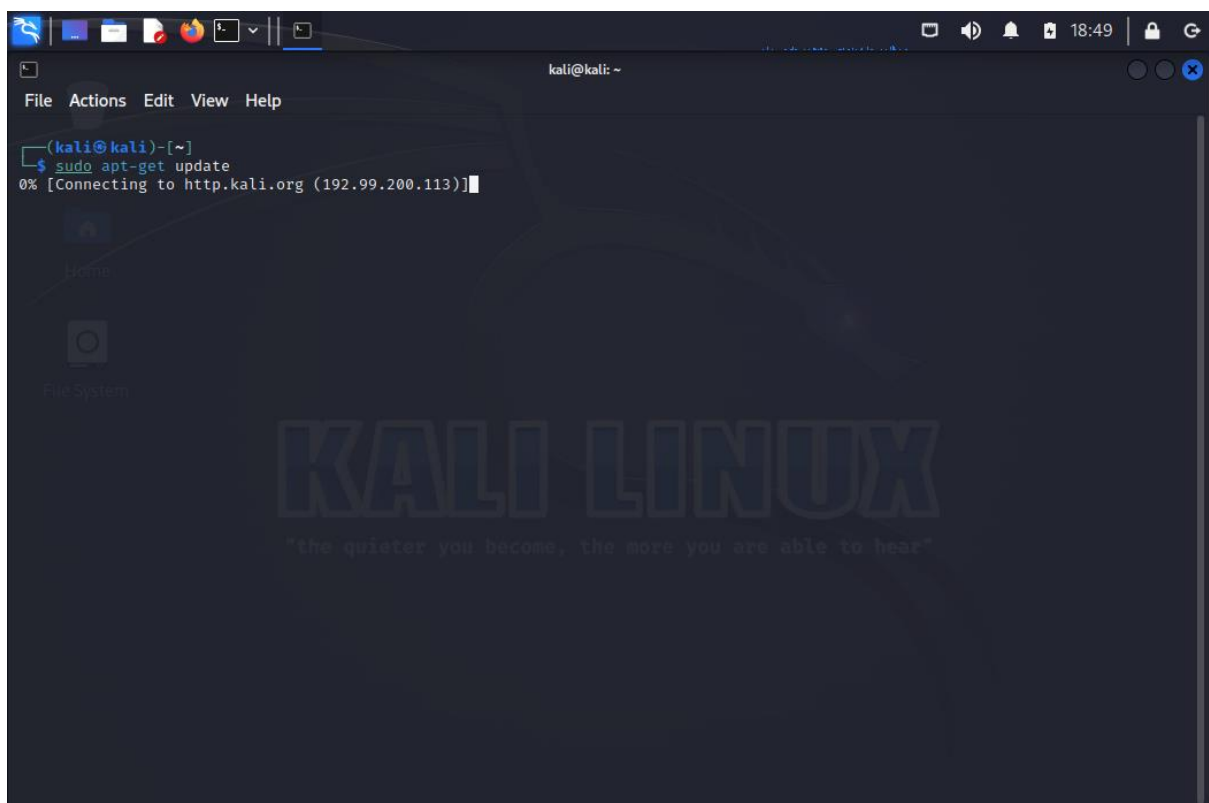
yum: Package management for Red Hat-based distributions

systemctl: Manage system services

crontab: Schedule recurring tasks

useradd: Add a new user

passwd: Change user password




```
kali@kali: ~  
File Actions Edit View Help  
(kali@kali)-[~]  
$ systemctl  
UNIT                                LOAD    ACTIVE SUB    DESCRIPTION>  
proc-sys-fs-binfmt_misc.automount  loaded active running Arbitrary E>  
sys-devices-pci0000:00-0000:00:01.1-ata2-host2-target2:0:0-2:0:0:0-block-sr0.device loaded active plugged VBOX_CD-ROM>  
sys-devices-pci0000:00-0000:00:03.0-net-eth0.device loaded active plugged 82540EM Gig>  
sys-devices-pci0000:00-0000:00:05.0-sound-card0-controlC0.device loaded active plugged /sys/device>  
sys-devices-pci0000:00-0000:00:0d.0-ata3-host1-target1:0:0-1:0:0:0-block-sda-sda1.device loaded active plugged VBOX_HARDDI>  
sys-devices-pci0000:00-0000:00:0d.0-ata3-host1-target1:0:0-1:0:0:0-block-sda.device loaded active plugged VBOX_HARDDI>  
sys-devices-platform-serial8250-tty-ttyS0.device loaded active plugged /sys/device>  
sys-devices-platform-serial8250-tty-ttyS1.device loaded active plugged /sys/device>  
sys-devices-platform-serial8250-tty-ttyS2.device loaded active plugged /sys/device>  
sys-devices-platform-serial8250-tty-ttyS3.device loaded active plugged /sys/device>  
sys-devices-virtual-misc-rfkill.device loaded active plugged /sys/device>  
sys-module-configfs.device loaded active plugged /sys/module>  
sys-module-fuse.device loaded active plugged /sys/module>  
sys-subsystem-net-devices-eth0.device loaded active plugged 82540EM Gig>  
-.mount loaded active mounted Root Mount>  
dev-hugepages.mount loaded active mounted Huge Pages >  
dev-mqueue.mount loaded active mounted POSIX Messa>  
proc-sys-fs-binfmt_misc.mount loaded active mounted Arbitrary E>  
run-credentials-systemd\x2dsysctl.service.mount loaded active mounted /run/creden>  
run-credentials-systemd\x2dsysusers.service.mount loaded active mounted /run/creden>  
run-credentials-systemd\x2dtmpfiles\x2dsetup.service.mount loaded active mounted /run/creden>  
run-credentials-systemd\x2dtmpfiles\x2dsetup\x2ddev.service.mount loaded active mounted /run/creden>  
run-rpc_pipefs.mount loaded active mounted RPC Pipe Fi>  
run-user-1000-doc.mount loaded active mounted /run/user/1>  
run-user-1000-gvfs.mount loaded active mounted /run/user/1>  
run-user-1000.mount loaded active mounted /run/user/1>  
sys-fs-fuse-connections.mount loaded active mounted FUSE Contro>  
sys-kernel-config.mount loaded active mounted Kernel Conf>  
sys-kernel-debug.mount loaded active mounted Kernel Debu>  
sys-kernel-tracing.mount loaded active mounted Kernel Trac>  
systemd-ask-password-plymouth.path loaded active waiting Forward Pas>  
systemd-ask-password-wall.path loaded active waiting Forward Pas>
```

```
kali@kali: ~  
File Actions Edit View Help  
(kali@kali)-[~]  
$ sudo useradd Bhargav  
(kali@kali)-[~]  
$ passwd Bhargav  
passwd: You may not view or modify password information for Bhargav.  
(kali@kali)-[~]  
$ sudo passwd Bhargav  
New password:  
Retype new password:  
passwd: password updated successfully  
(kali@kali)-[~]  
$
```