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**COURSE: CYBERSECURITY & ETHICAL HACKING
SMARTBRIDGE EXTERNSHIP PROGRAM**

ASSESSMENT – 1 (20,21 MAY 2023)

FILE AND DIRECTORY OPERATIONS

1. ls (list files and directories)

```
$ ls  
a.txt  usernames.txt  user.txt
```

2.cd (change directory)

```
$ cd /  
  
(kali㉿kali)-[/]  
$ pwd  
/  
Documents
```

3.pwd (print working directory)

4.mkdir(make directory)

```
$ mkdir cyber
```

```
$ ls  
a.txt  cyber  usernames.txt  user.txt
```

5.touch (create an empty file)

```
$ touch learn_linux.txt
```

```
$ ls  
a.txt  cyber  learn_linux.txt  usernames.txt  user.txt
```

6.cp (copy files and directories)

```
$ cp /etc/passwd .  
$ ls  
passwd
```

7.mv (move or rename files and directories)

8.rm (remove files and directories)

9.find (find for files and directories)

```
$ find / -name *.txt -type f 2>/dev/null  
/home/kali/Desktop/bruteforce/list.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/Werkzeug-2.3.2.dist-info/top_level.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/Flask-2.3.1.dist-info/entry_points.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/Flask-2.3.1.dist-info/top_level.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/MarkupSafe-2.1.2.dist-info/top_level.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/blinker-1.6.2.dist-info/top_level.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/pip-22.3.dist-info/LICENSE.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/pip-22.3.dist-info/entry_points.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/pip-22.3.dist-info/top_level.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/wheel-0.37.1.dist-info/LICENSE.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/wheel-0.37.1.dist-info/entry_points.txt  
/home/kali/Desktop/Empire/flask/lib/python3.10/site-packages/wheel-0.37.1.dist-info/top_level.txt
```

FILE VIEWING AND EDITING

1.cat (concatenate and display content)

```
$ cat /etc/passwd  
root:x:0:0:root:/root:/usr/bin/zsh  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
```

2.less (view file content with pagination)

less /etc/passwd

```
File Actions Edit View Help
root:x:0:0:root:/root:/usr/bin/zsh
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
_apt:x:100:65534::/nonexistent:/usr/sbin/nologin
systemd-network:x:101:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:102:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
systemd-timesync:x:103:110:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:104:111::/nonexistent:/usr/sbin/nologin
tss:x:105:113:TPM software stack,,,:/var/lib/tpm:/bin/false
strongswan:x:106:65534::/var/lib/strongswan:/usr/sbin/nologin
tcpdump:x:107:114::/nonexistent:/usr/sbin/nologin
usbmux:x:108:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
sshd:x:109:65534::/run/sshd:/usr/sbin/nologin
dnsmasq:x:110:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
/etc/passwd
```

3.head (display the beginning of a file)

```
$ head /etc/passwd
root:x:0:0:root:/root:/usr/bin/zsh
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
```

4.tail (display the end of a file)

FILE PERMISSIONS

1.chmod (change file permissions)

```
(kali㉿kali)-[REDACTED]
└─$ ls -la
total 8
drwxr-xr-x  2 kali kali 4096 May 21 08:25 .
drwxr-xr-x 43 kali kali 4096 May 21 08:23 ..
-rw-r--r--  1 kali kali   0 May 21 08:25 game.exe

(kali㉿kali)-[REDACTED]
└─$ chmod +x game.exe

(kali㉿kali)-[REDACTED]
└─$ ls -la
total 8
drwxr-xr-x  2 kali kali 4096 May 21 08:25 .
drwxr-xr-x 43 kali kali 4096 May 21 08:23 ..
-rwxr-xr-x  1 kali kali   0 May 21 08:25 game.exe
```

2.chown(change file owner)

```
(kali㉿kali)-[REDACTED]
└─$ ls -la
total 8
drwxr-xr-x  2 kali kali 4096 May 21 08:25 .
drwxr-xr-x 43 kali kali 4096 May 21 08:23 ..
-rwxr-xr-x  1 root root   0 May 21 08:25 game.exe

(kali㉿kali)-[REDACTED]
└─$ sudo chown kali game.exe

(kali㉿kali)-[REDACTED]
└─$ ls -la
total 8
drwxr-xr-x  2 kali kali 4096 May 21 08:25 .
drwxr-xr-x 43 kali kali 4096 May 21 08:23 ..
-rwxr-xr-x  1 kali root   0 May 21 08:25 game.exe
```

3.chgrp (change file group)

```
(kali㉿kali)-[REDACTED]  
$ ls -la  
total 8  
drwxr-xr-x  2 kali kali 4096 May 21 08:25 .  
drwxr-xr-x 43 kali kali 4096 May 21 08:23 ..  
-rwxr-xr-x  1 kali root    0 May 21 08:25 game.exe
```

```
(kali㉿kali)-[REDACTED]  
$ sudo chgrp kali game.exe
```

```
(kali㉿kali)-[REDACTED]  
$ ls -la  
total 8  
drwxr-xr-x  2 kali kali 4096 May 21 08:25 .  
drwxr-xr-x 43 kali kali 4096 May 21 08:23 ..  
-rwxr-xr-x  1 kali kali    0 May 21 08:25 game.exe
```

FILE COMPRESSION AND ARCHIVING

1. tar (archive files)

```
(kali㉿kali)-  
$ ls -la  
total 12  
drwxr-xr-x  2 kali kali 4096 May 21 08:31 .  
drwxr-xr-x 43 kali kali 4096 May 21 08:23 ..  
-rw-r--r--  1 kali kali   26 May 21 08:31 file1.txt  
-rwxr-xr-x  1 kali kali    0 May 21 08:25 game.exe  
  
(kali㉿kali)-  
$ tar -cvf archive1.tar file1.txt game.exe  
file1.txt  
game.exe  
  
(kali㉿kali)-  
$ ls -la  
total 24  
drwxr-xr-x  2 kali kali  4096 May 21 08:31 .  
drwxr-xr-x 43 kali kali  4096 May 21 08:23 ..  
-rw-r--r--  1 kali kali 10240 May 21 08:31 archive1.tar  
-rw-r--r--  1 kali kali   26 May 21 08:31 file1.txt  
-rwxr-xr-x  1 kali kali    0 May 21 08:25 game.exe
```

2. gzip (compress files)

```
(kali㉿kali)-  
$ ls -la  
total 24  
drwxr-xr-x  2 kali kali  4096 May 21 08:31 .  
drwxr-xr-x 43 kali kali  4096 May 21 08:23 ..  
-rw-r--r--  1 kali kali 10240 May 21 08:31 archive1.tar  
-rw-r--r--  1 kali kali   26 May 21 08:31 file1.txt  
-rwxr-xr-x  1 kali kali    0 May 21 08:25 game.exe  
  
(kali㉿kali)-  
$ gzip game.exe  
  
(kali㉿kali)-  
$ ls -la  
total 28  
drwxr-xr-x  2 kali kali  4096 May 21 08:32 .  
drwxr-xr-x 43 kali kali  4096 May 21 08:23 ..  
-rw-r--r--  1 kali kali 10240 May 21 08:31 archive1.tar  
-rw-r--r--  1 kali kali   26 May 21 08:31 file1.txt  
-rwxr-xr-x  1 kali kali   29 May 21 08:25 game.exe.gz
```

3. unzip (extract files from zip archive)

```
$ ls -la  
total 100960  
drwxr-xr-x 2 kali kali  4096 May 21 08:34 .  
drwxr-xr-x 3 kali kali  4096 May 21 08:34 ..  
-rw-r--r-- 1 kali kali 103371385 Oct 26 2022 Programming.zip
```

```

$ unzip Programming.zip
Archive:  Programming.zip
  extracting: 1. Introduction to Android Development/1. [AD] 1.1 Setup and Run First App on Android Studio-studyfever.mp4
  extracting: 1. Introduction to Android Development/Join @getstudyfever.pdf
  extracting: 1. Introduction to Android Development/5. [AD] 1.4 Activity Lifecycle and Debugging-studyfever.mp4
  extracting: 1. Introduction to Android Development/4. [AD] 1.3 Android Components - Activities, Services, Receivers, Providers-studyfever.mp4
  extracting: 1. Introduction to Android Development/3. 1.2 [Doc] Project Structure.pdf
  extracting: 1. Introduction to Android Development/2. [AD] 1.2 Android Project Structure-studyfever.mp4
  extracting: 1. Introduction to Android Development/6. Quiz/Q7.PNG
  extracting: 1. Introduction to Android Development/6. Quiz/Q12.PNG
  extracting: 1. Introduction to Android Development/6. Quiz/Q4.PNG
  extracting: 1. Introduction to Android Development/6. Quiz/Q10.PNG
  extracting: 1. Introduction to Android Development/6. Quiz/Answers.txt
  extracting: 1. Introduction to Android Development/6. Quiz/Q11.PNG
  extracting: 1. Introduction to Android Development/6. Quiz/Q1.PNG
  extracting: 1. Introduction to Android Development/6. Quiz/0.png
  extracting: 1. Introduction to Android Development/6. Quiz/Q2.PNG
  extracting: 1. Introduction to Android Development/6. Quiz/Q9.PNG

```

```

$ ls -la
total 100964
drwxr-xr-x 3 kali kali    4096 May 21 08:34 .
drwxr-xr-x 3 kali kali    4096 May 21 08:34 ..
drwxr-xr-x 3 kali kali    4096 May 21 08:34 '1. Introduction to Android Development'
-rw-r--r-- 1 kali kali 103371385 Oct 26  2022 Programming.zip

```

```

$ ls
'1. [AD] 1.1 Setup and Run First App on Android Studio-studyfever.mp4'
'2. [AD] 1.2 Android Project Structure-studyfever.mp4'
'3. 1.2 [Doc] Project Structure.pdf'
'4. [AD] 1.3 Android Components - Activities, Services, Receivers, Providers-studyfever.mp4'
'5. [AD] 1.4 Activity Lifecycle and Debugging-studyfever.mp4'
'6. Quiz'

```

PROCESS MANAGEMENT

1.ps (list running processes)

```

$ ps
  PID TTY          TIME CMD
 2351 pts/0        00:00:15 zsh
 16385 pts/0        00:00:00 ps

```

2.top: Display real-time system information and processes


```
File Actions Edit View Help
top - 08:36:36 up 28 min, 1 user, load average: 0.40, 0.42, 0.34
Tasks: 200 total, 1 running, 199 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.3 us, 0.6 sy, 0.0 ni, 98.9 id, 0.0 wa, 0.0 hi, 0.2 si, 0.0 st
MiB Mem : 1959.0 total, 72.5 free, 887.8 used, 1189.1 buff/cache
MiB Swap: 1024.0 total, 1023.0 free, 1.0 used. 1071.2 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
883	root	20	0	386048	116384	59880	S	0.7	5.8	0:23.40	Xorg
2348	kali	20	0	441712	104932	85536	S	0.7	5.2	0:05.90	qterminal
1668	kali	20	0	415084	27676	20476	S	0.3	1.4	0:06.07	panel-15-genmon
1805	kali	20	0	364504	44208	30868	S	0.3	2.2	0:03.61	vmtoolsd
16656	kali	20	0	11608	4972	3080	R	0.3	0.2	0:00.04	top
1	root	20	0	167892	12428	9092	S	0.0	0.6	0:01.59	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.01	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
8	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/0:0H-events_highpri
9	root	20	0	0	0	0	I	0.0	0.0	0:00.41	kworker/u64:0-flush-8:0
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

3.kill (terminate processes)

```
$ ps
  PID TTY          TIME CMD
 2351 pts/0        00:00:18 zsh
 19260 pts/0        00:00:00 ps
```

4.bg (run processes in background)

```
$ sleep 12
^Z
zsh: suspended sleep 12
```

5.fg: Bring background processes to the foreground

```
$ fg
[1] + running sleep 23
```

SYSTEM INFORMATION

1. uname: Print system information

```
$ uname
Linux
```

2. df: Display disk space usage

```
$ df
```

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
udev	963488	0	963488	0%	/dev
tmpfs	200604	1292	199312	1%	/run
/dev/sda1	82083148	34768992	43098608	45%	/
tmpfs	1003008	0	1003008	0%	/dev/shm
tmpfs	5120	0	5120	0%	/run/lock
tmpfs	200600	88	200512	1%	/run/user/1000

3. free: Display memory usage

```
$ free
```

	total	used	free	shared	buff/cache	available
Mem:	2006020	893916	466560	11088	826732	1112104
Swap:	1048572	42748	1005824			

4. uptime: Show system uptime

```
$ uptime
```

08:44:04 up 36 min, 1 user, load average: 0.38, 0.46, 0.41

5. who: Display logged-in users

```
$ who
```

kali	tty7	2023-05-21 08:08 (:0)
------	------	-----------------------

6. w: Display logged-in users and their activities

```
$ w
```

08:45:59 up 38 min, 1 user, load average: 0.49, 0.43, 0.40

USER	TTY	FROM	LOGIN@	IDLE	JCPU	PCPU	WHAT
kali	tty7	:0	08:08	38:01	30.99s	0.40s	xfce4-session

NETWORKING

1. ifconfig: Configure network interfaces

```
$ ifconfig lo
```

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	28	bytes 2736 (2.6 KiB)
RX errors	0	dropped 0 overruns 0 frame 0
TX packets	28	bytes 2736 (2.6 KiB)
TX errors	0	dropped 0 overruns 0 carrier 0 collisions 0

2. ping: Send ICMP echo requests to a network host

```
$ ping google.com
PING google.com (142.250.194.174) 56(84) bytes of data:
64 bytes from del12s06-in-f14.1e100.net (142.250.194.174): icmp_seq=1 ttl=128 time=99.0 ms
64 bytes from del12s06-in-f14.1e100.net (142.250.194.174): icmp_seq=2 ttl=128 time=96.6 ms
64 bytes from del12s06-in-f14.1e100.net (142.250.194.174): icmp_seq=3 ttl=128 time=96.1 ms
64 bytes from del12s06-in-f14.1e100.net (142.250.194.174): icmp_seq=4 ttl=128 time=116 ms
64 bytes from del12s06-in-f14.1e100.net (142.250.194.174): icmp_seq=5 ttl=128 time=128 ms
64 bytes from del12s06-in-f14.1e100.net (142.250.194.174): icmp_seq=6 ttl=128 time=121 ms
```

3. ssh: Securely connect to a remote system

```
$ ssh marcus@10.10.11.211
```

4. scp: Securely copy files between systems

```
$ scp -r /var/www/html hacker@12.14.15.16:/test/index/
```

5. wget: Download files from the web

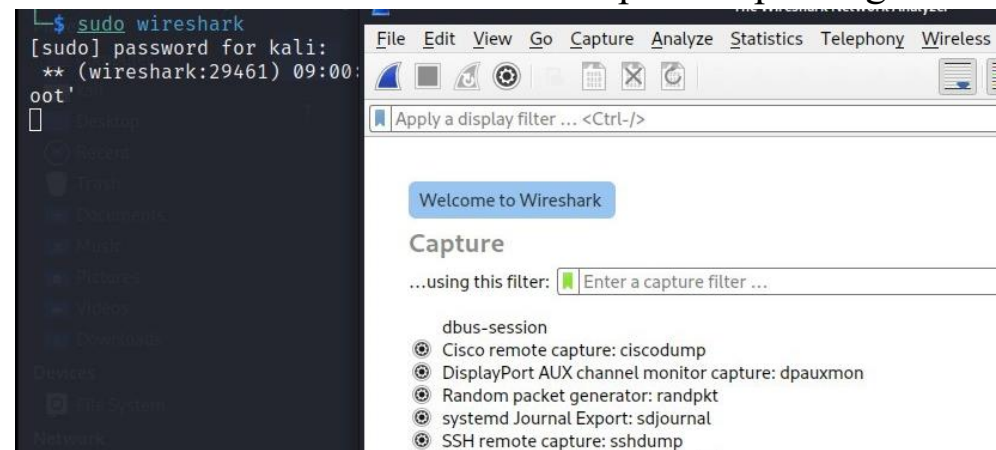
```
$ wget https://github.com/cassidoo/todometer/archive/refs/heads/main.zip
--2023-05-21 08:57:28-- https://github.com/cassidoo/todometer/archive/refs/heads/main.zip
Resolving github.com (github.com)... 20.207.73.82, 64:ff9b::14cf:4952
Connecting to github.com (github.com)|20.207.73.82|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://codeload.github.com/cassidoo/todometer/zip/refs/heads/main [following]
--2023-05-21 08:57:29-- https://codeload.github.com/cassidoo/todometer/zip/refs/heads/main
Resolving codeload.github.com (codeload.github.com)... 20.207.73.88, 64:ff9b::14cf:4958
Connecting to codeload.github.com (codeload.github.com)|20.207.73.88|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [application/zip]
Saving to: 'main.zip'

main.zip                               [          ] 1.75M 1.48MB/s in 1.2s

2023-05-21 08:57:32 (1.48 MB/s) - 'main.zip' saved [1832115]
```

SYSTEM ADMINISTRATION

1. sudo: Execute commands with superuser privileges



2. apt-get: Package management for Debian-based distributions

```
$ sudo apt-get update
Hit:1 http://kali.download/kali kali-rolling InRelease
Reading package lists ... Done
```

3. yum: Package management for Red Hat-based distributions(in kali yum not used, so this is skipped)

4. systemctl: Manage system services

```
$ systemctl status nessusd
o nessusd.service - The Nessus Vulnerability Scanner
   Loaded: loaded (/lib/systemd/system/nessusd.service; disabled; preset: disabled)
   Active: inactive (dead)
```

5. crontab: Schedule recurring tasks

```
$ crontab -e
no crontab for kali - using an empty one

Select an editor. To change later, run 'select-editor'.
 1. /bin/nano          ← easiest
 2. /usr/bin/vim.basic
 3. /usr/bin/vim.tiny

Choose 1-3 [1]: 1
crontab: installing new crontab
```

cronjob to ping localhost everyday with 1 packet


```
File Actions Edit View Help
GNU nano 7.2 /tmp/crontab.HXDjYJ/crontab *
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h dom mon dow   command
0 0 * * * ping -c 1 localhost > /dev/null
```

6. useradd: Add a new user

```
File Actions Edit View Help
(kali@kali)-[~]
$ sudo useradd hacker
[sudo] password for kali:
```

7. passwd: Change user password

```
(kali@kali)-[~]
$ sudo passwd hacker
New password:
Retype new password:
passwd: password updated successfully
```