

1. Log in to the SU user, navigate to the home/Desktop folder, and perform the following:

- A. Create three new directories and three new files, using a single command.
- B. Move the files to one of the directories.
- C. Navigate to the directory which contains the files and move the files to another directory.
- D. Delete the files from the directory.

A.

```
(kali㉿kali)-[~]
$ cd /home/kali/Desktop

(kali㉿kali)-[~/Desktop]
$ sudo mkdir Katalog1 Katalog2 Katalog3 && touch Plik1.txt Plik2.txt Plik3.txt

(kali㉿kali)-[~/Desktop]
$ ls -l
total 12
drwxr-xr-x 2 root root 4096 Apr 21 06:12 Katalog1
drwxr-xr-x 2 root root 4096 Apr 21 06:12 Katalog2
drwxr-xr-x 2 root root 4096 Apr 21 06:12 Katalog3
-rw-r--r-- 1 kali kali 0 Apr 21 06:12 Plik1.txt
-rw-r--r-- 1 kali kali 0 Apr 21 06:12 Plik2.txt
-rw-r--r-- 1 kali kali 0 Apr 21 06:12 Plik3.txt

(kali㉿kali)-[~/Desktop]
$
```

B.

```
(kali㉿kali)-[~/Desktop]
$ sudo mv Plik1.txt Plik2.txt Plik3.txt Katalog1

(kali㉿kali)-[~/Desktop]
$ cd Katalog1

(kali㉿kali)-[~/Desktop/Katalog1]
$ ls -l
total 0
-rw-r--r-- 1 kali kali 0 Apr 21 06:12 Plik1.txt
-rw-r--r-- 1 kali kali 0 Apr 21 06:12 Plik2.txt
-rw-r--r-- 1 kali kali 0 Apr 21 06:12 Plik3.txt
```

C.

```
(kali㉿kali)-[~/Desktop/Katalog1]
$ sudo mv Plik1.txt Plik2.txt Plik3.txt /home/kali/Desktop/Katalog3

(kali㉿kali)-[~/Desktop/Katalog1]
$ cd /home/kali/Desktop/Katalog3

(kali㉿kali)-[~/Desktop/Katalog3]
$ ls -l
total 0
-rw-r--r-- 1 kali kali 0 Apr 21 06:29 Plik1.txt
-rw-r--r-- 1 kali kali 0 Apr 21 06:29 Plik2.txt
-rw-r--r-- 1 kali kali 0 Apr 21 06:29 Plik3.txt
```

D.

```
(kali㉿kali)-[~/Desktop/Katalog3]
$ sudo rm Plik1.txt Plik2.txt Plik3.txt

(kali㉿kali)-[~/Desktop/Katalog3]
$ ls -l
total 0
```

2. Check the path of the current directory.

```
(kali㉿kali)-[~/Desktop/Katalog3]
$ pwd
/home/kali/Desktop/Katalog3
```

3. Navigate to the Desktop directory and display the files and folders it contains.

```
(kali㉿kali)-[~/Desktop/Katalog3]
$ cd /home/kali/Desktop

(kali㉿kali)-[~/Desktop]
$ ls -la
total 20
drwxrwxr-x  5 kali kali 4096 Apr 21 06:29 .
drwxr-xr-x 18 kali kali 4096 Apr 21 06:04 ..
drwxr-xr-x  2 root root 4096 Apr 21 06:41 Katalog1
drwxr-xr-x  2 root root 4096 Apr 21 06:29 Katalog2
drwxr-xr-x  2 root root 4096 Apr 21 06:44 Katalog3
```

4. Are there any hidden files or folders?

YES, TWO

5. Check through which user you are connected to the system, using two ways.

```
(kali㉿kali)-[~/Desktop]
$ whoami
kali

(kali㉿kali)-[~/Desktop]
$ id
uid=1000(kali) gid=1000(kali) groups=1000(kali),4(adm),20(dialout),24(cdrom),25(floppy),27(sudo),29(audio),36
4(video),46(plugdev),109(netdev),119(wireshark),121(bluetooth),133(scanner),141(vboxsf),142(kaboxer)

(kali㉿kali)-[~/Desktop]
$ who
kali      tty7      2024-04-21 05:59 (:0)
```

6. Change a user's password.

```
(kali㉿kali)-[~]
$ passwd
Changing password for kali.
Current password:
New password:
Retype new password:
passwd: password updated successfully
```

7. What does the **cd** command perform?

cd – (change directory) perform change directory.

8. What does **cd /** perform?

cd / - perform change directory to main catalogue.

9. Execute **cd** and **cd /** and inspect the output.

cd – perform change directory to home catalogue.

```
(kali㉿kali)-[~/Desktop/Katalog1]
$ cd

(kali㉿kali)-[~]
$ pwd
/home/kali
```

cd / - perform change directory to main catalogue

```
(kali㉿kali)-[~]
$ cd /home/kali/Desktop/Katalog1

(kali㉿kali)-[~/Desktop/Katalog1]
$ cd /

(kali㉿kali)-[/]
$ pwd
/
```

10. Clean the terminal from output.

```
(kali㉿kali)-[/]
$ clear
```

11. Create a file using **nano** and write the name of your favorite operating system. In addition, find a way to display the type of the current operating system and add the output to the file.

```
(kali㉿kali)-[~]
$ nano Plik1.txt

(kali㉿kali)-[~]
$ cat Plik1.txt
Windows

(kali㉿kali)-[~]
$ uname >> Plik1.txt

(kali㉿kali)-[~]
$ cat Plik1.txt
Windows
Linux
```

12. Execute a command that will display the file's content.

```
(kali㉿kali)-[~]  
$ cat Plik1.txt  
Windows  
  
Linux
```

13. Create three hidden files.

```
(kali㉿kali)-[~]  
$ touch .plik.txt .plik1.txt .plik2.txt
```

14. Execute a command that will display those files.

```
(kali㉿kali)-[~]  
$ ls -la  
  
-rw-r--r-- 1 kali kali 0 Apr 21 08:18 .plik1.txt  
-rw-r--r-- 1 kali kali 6 Apr 21 08:13 Plik1.txt  
-rw-r--r-- 1 kali kali 0 Apr 21 08:18 .plik2.txt  
-rw-r--r-- 1 kali kali 0 Apr 21 08:18 .plik.txt
```

15. Delete the hidden files that were created in step 13.

```
(kali㉿kali)-[~]  
$ rm .plik1.txt .plik2.txt .plik.txt  
  
-rw-r--r-- 1 kali kali 6 Apr 21 08:13 Plik1.txt  
-rw-r--r-- 1 kali kali 807 May 12 2022 .profile
```

PART 2: FIND COMMAND

16. Create files in each system directory and display the paths of those files.

```
(root㉿kali)-[/home/kali]  
# for dir in `ls /` ; do touch "$dir/plik.txt" ; ls -l /$dir/plik.txt ; done  
-rw-r--r-- 1 root root 0 Apr 26 20:15 /bin/plik.txt  
-rw-r--r-- 1 root root 0 Apr 26 20:15 /boot/plik.txt  
-rw-r--r-- 1 root root 0 Apr 26 20:15 /dev/plik.txt  
-rw-r--r-- 1 root root 0 Apr 26 20:15 /etc/plik.txt  
-rw-r--r-- 1 root root 0 Apr 26 20:15 /home/plik.txt
```

17. Navigate to the root directory and display all the files that begin with three digits.

```
(root㉿kali)-[/]  
# find / -type f -name '[0-9][0-9][0-9]*'  
/boot/grub/i386-pc/915resolution.mod  
/etc/ppp/ip-up.d/0000usepeerdns
```

18. Search for all the files in the system that begin with five numbers.

```
(root㉿kali)-[/]  
# find . -type f -name '[0-9][0-9][0-9][0-9][0-9]*'  
./var/lib/postgresql/14/main/pg_wal/0000000100000000000000000001  
./var/lib/postgresql/14/main/base/1/13590_vm  
./var/lib/postgresql/14/main/base/1/13595_fsm  
./var/lib/postgresql/14/main/base/1/13605_fsm
```

19. Search for all the files in the system that start with the word "bash".

```
(root@kali)-[/]
# find / -type f -name 'bash*'
/etc/bash.bashrc
/etc/profile.d/bash_completion.sh
/etc/apparmor.d/abstractions/bash
/etc/bash_completion
/var/lib/dpkg/info/bash-completion.preinst
/var/lib/dpkg/info/bash-completion.conffiles
/var/lib/dpkg/info/bash.list
/var/lib/dpkg/info/bash.md5sums
```

20. Search for all the directories that are smaller than 4MB.

```
(root@kali)-[/]
# find / -type d -size -4M
/
/boot
/boot/grub
/boot/grub/themes
/boot/grub/themes/kali
```

21. Search for all the files that are smaller than 3MB.

```
(root@kali)-[/]
# find / -type f -size -3M
/test.txt
/plik2.txt
/boot/test.txt
/boot/plik2.txt
/boot/plik1.txt
/boot/System.map-5.16.0-kali7-amd64
/boot/grub/test.txt
/boot/grub/plik2.txt
/boot/grub/themes/test.txt
```

PART 3: Users & Group Management

1. Create a user in two different ways.

```
(kali㉿kali)-[~]
└─$ sudo adduser guest
[sudo] password for kali:
Adding user `guest' ...
Adding new group `guest' (1001) ...
Adding new user `guest' (1001) with group `guest' ...
Creating home directory `/home/guest' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for guest
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] Y
```

```
(kali㉿kali)-[~]
└─$ sudo useradd -m john -p john

(kali㉿kali)-[~]
└─$ ls -la /home
total 52
drwxr-xr-x  4 root root  4096 Apr 22 13:41 .
drwxr-xr-x 19 root root 36864 Apr 22 12:31 ..
drwxr-xr-x  5 john john  4096 Apr 22 13:41 john
drwxr-xr-x 18 kali kali  4096 Apr 22 13:41 kali
-rw-r--r--  1 root root    0 Apr 22 12:36 test.txt
```

2. When generating a user in the longer method, create a password.

```
(kali㉿kali)-[~]
└─$ sudo adduser guest
Adding user `guest' ...
Adding new group `guest' (1001) ...
Adding new user `guest' (1001) with group `guest' ...
Creating home directory `/home/guest' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for guest
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y

(kali㉿kali)-[~]
└─$ sudo passwd guest
New password:
Retype new password:
passwd: password updated successfully
```


3. Create a new group.

```
(kali㉿kali)-[~] test.txt
$ sudo addgroup accounting
[sudo] password for kali:
Adding group `accounting' (GID 1004) ...
Done.
```

4. Move a user to the newly created group.

```
(kali㉿kali)-[~] test.txt
$ groups guest
guest : guest

(kali㉿kali)-[~]
$ sudo usermod -a -G accounting guest

(kali㉿kali)-[~]
$ groups guest
guest : guest accounting
```

5. Which command allows to find all users and their groups.

```
(kali㉿kali)-[~]
$ cat /etc/group | grep guest
accounting:x:1004:guest
guest:x:1001:
```

7. Switch to another user.

```
(guest㉿kali)-[~]
$ su - kali
Password:
```

8. Create a directory with that user.

```
(kali㉿kali)-[~] test.txt
$ mkdir Katalog1

(kali㉿kali)-[~]
$ ls -l
total 44
drwxrwxr-x 5 kali kali 4096 Apr 22 12:31 Desktop
drwxr-xr-x 2 kali kali 4096 Apr 22 12:31 Documents
drwxr-xr-x 2 kali kali 4096 Apr 22 12:31 Downloads
drwxr-xr-x 2 kali kali 4096 Apr 22 14:25 Katalog1
drwxr-xr-x 2 kali kali 4096 Apr 22 12:31 Music
drwxr-xr-x 2 kali kali 4096 Apr 22 12:31 Pictures
-rwxr-xr-x 1 kali kali 13 Apr 13 09:07 Pika
-rw-r--r-- 1 kali kali 0 Apr 21 12:06 plik1.txt
-rw-r--r-- 1 root root 0 Apr 21 13:16 plik2.txt
drwxr-xr-x 2 kali kali 4096 Apr 22 12:31 Public
drwxr-xr-x 2 kali kali 4096 Apr 22 12:31 Templates
-rw-r--r-- 1 root root 0 Apr 22 12:36 test.txt
drwxr-xr-x 4 kali kali 4096 Apr 22 12:31 unicorn
drwxr-xr-x 2 kali kali 4096 Apr 22 12:31 Videos
```

9. Which operation should be performed to create a directory.

We should perform create operation by using a *mkdir* command.

10. Switch to root user, create a new user, and add him to the sudo group via a single command.

```
(kali㉿kali)-[~] test.txt
$ su -
Password:
(root㉿kali)-[~]
# adduser john ; usermod -a -G sudo john
Adding user `john' ...
Adding new group `john' (1005) ...
Adding new user `john' (1003) with group `john' ...
Creating home directory `/home/john' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for john
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
(root㉿kali)-[~]
# groups john
john : john sudo
```


PART 4: Permissions

1. Create two new files in one of the directories you created in part 1, and grant only write permission to all files inside the directory.

~

```
(kali㉿kali)-[~]
$ cd Katalog1 && touch Plik1.txt Plik2.txt && chmod 222 Plik1.txt Plik2.txt

(kali㉿kali)-[~/Katalog1]
$ ls -l
total 0
--w--w--w- 1 kali kali 0 Apr 24 08:32 Plik1.txt
--w--w--w- 1 kali kali 0 Apr 24 08:32 Plik2.txt
```

2. Grant the highest permission to files and verify the change.

```
(kali㉿kali)-[~/Katalog1]
$ chmod 777 Plik1.txt Plik2.txt

(kali㉿kali)-[~/Katalog1]
$ ls -l
total 0
-rwxrwxrwx 1 kali kali 0 Apr 24 08:32 Plik1.txt
-rwxrwxrwx 1 kali kali 0 Apr 24 08:32 Plik2.txt
```

3. Choose one file and change the owner of the file.

```
(kali㉿kali)-[~/Katalog1]
$ sudo chown guest:kali Plik1.txt

(kali㉿kali)-[~/Katalog1]
$ ls -l
total 0
-rwxrwxrwx 1 guest kali 0 Apr 24 08:32 Plik1.txt
-rwxrwxrwx 1 kali kali 0 Apr 24 08:32 Plik2.txt
```

PART 5: Alias

1. Change the command `ifconfig` to `ipconfig`.

```
(kali㉿kali)-[~]  
$ nano ~/.bashrc
```

```
elif [ -f /etc/bash_completion  
  . /etc/bash_completion  
fi  
fi  
alias ipconfig='ifconfig'
```

```
(kali㉿kali)-[~]  
$ ipconfig  
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::a00:27ff:fed1:c147 prefixlen 64 scopeid 0x20<link>  
    ether 08:00:27:d1:c1:47 txqueuelen 1000 (Ethernet)  
    RX packets 1 bytes 590 (590.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 35 bytes 5084 (4.9 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 0 bytes 0 (0.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 0 bytes 0 (0.0 B)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
(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::a00:27ff:fed1:c147 prefixlen 64 scopeid 0x20<link>  
    ether 08:00:27:d1:c1:47 txqueuelen 1000 (Ethernet)  
    RX packets 1 bytes 590 (590.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 35 bytes 5084 (4.9 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 0 bytes 0 (0.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 0 bytes 0 (0.0 B)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

2. Apply the change to all users.

```
(root@kali)-[/etc]
# nano bash.bashrc

(root@kali)-[/etc]
# su - guest
(guest@kali)-[~]
$ ipconfig
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::a00:27ff:fed1:c147 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:d1:c1:47 txqueuelen 1000 (Ethernet)
    RX packets 1 bytes 590 (590.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 35 bytes 5084 (4.9 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 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

(guest@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::a00:27ff:fed1:c147 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:d1:c1:47 txqueuelen 1000 (Ethernet)
    RX packets 1 bytes 590 (590.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 35 bytes 5084 (4.9 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 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

3. Choose any command and change it for one of the users.

```
(root@kali)-[~]
# nano /home/guest/.bashrc

alias search='find'
```

```

(guest@kali)-[~]
$ search --help
Usage: find [-H] [-L] [-P] [-Olevel] [-D debugopts] [path... ] [expression]

Default path is the current directory; default expression is -print.
Expression may consist of: operators, options, tests, and actions.

Operators (decreasing precedence; -and is implicit where no others are given):
  ( EXPR )  ! EXPR  -not EXPR  EXPR1 -a EXPR2  EXPR1 -and EXPR2
  EXPR1 -o EXPR2  EXPR1 -or EXPR2  EXPR1 , EXPR2

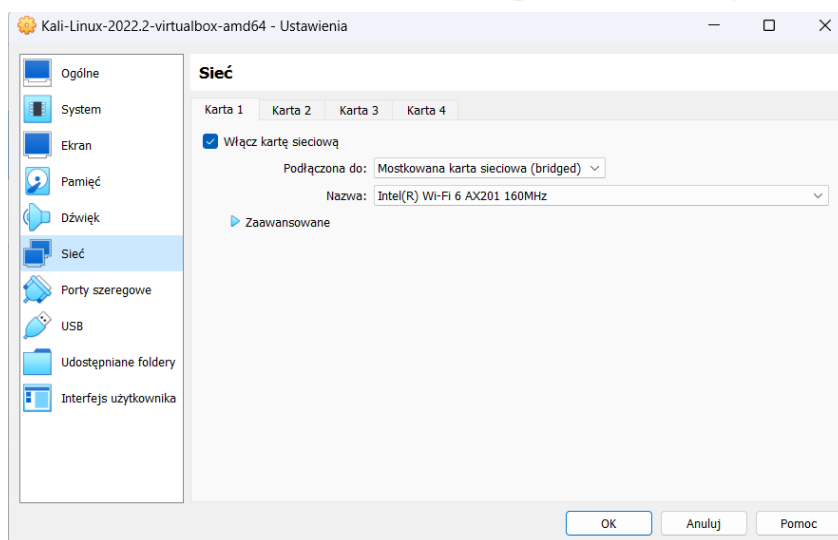
Positional options (always true):
  -daystart -follow -nowarn -regextype -warn

Normal options (always true, specified before other expressions):
  -depth -files0-from FILE -maxdepth LEVELS -mindepth LEVELS
  -mount -noleaf -xdev -ignore_readdir_race -noignore_readdir_race

```

PART 6: System update and apt usage

1. Make sure that the virtual machine is set on bridge network, and update the system.



```

(kali@kali)-[~]
$ sudo apt update
Hit:1 http://http.kali.org/kali kali-rolling InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
1861 packages can be upgraded. Run 'apt list --upgradable' to see them.

```

```

(kali@kali)-[~]
$ sudo apt upgrade

```

2. Verify that the sources in **sources.list** are updated. If they aren't, update them.

```

(kali@kali)-[~]
$ sudo apt update
[sudo] password for kali:
Hit:1 http://http.kali.org/kali kali-rolling InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
198 packages can be upgraded. Run 'apt list --upgradable' to see them.

```

3. Download a package called **cmatrix** and execute it.

```
└─$ sudo apt install cmatrix
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Suggested packages:
  cmatrix-xfont
The following NEW packages will be installed:
  cmatrix
0 upgraded, 1 newly installed, 0 to remove and 1636 not upgraded.
Need to get 33.9 kB of archives.
After this operation, 76.8 kB of additional disk space will be used.
Get:1 http://ftp.acc.umu.se/mirror/kali.org/kali-kali-rolling/main amd64 cmatrix amd64 2.0-6 [33.9 kB]
Fetched 33.9 kB in 1s (67.6 kB/s)
Selecting previously unselected package cmatrix.
(Reading database ... 399280 files and directories currently installed.)
Preparing to unpack .../cmatrix_2.0-6_amd64.deb ...
Unpacking cmatrix (2.0-6) ...
Setting up cmatrix (2.0-6) ...
Processing triggers for mailcap (3.70+nmu1) ...
Processing triggers for kali-menu (2023.4.6) ...
Processing triggers for desktop-file-utils (0.27-1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for man-db (2.12.0-1) ...
```

```
(kali㉿kali)-[~]
└─$ cmatrix
```

```
X Z X s 0 t u 3 2 k 5 8 s X + 2 S D ; , k a I ( O u
w A < X w , w F ` : . Q z r U t R E = > P ^ [ H F
d 2 ? % W g H 8 0 I v ? u s J u l k R [ i ? L d v
n * N r 8 q g 8 4 o f 2 T 9 4 M 2 > / 5 . b ; 7
3 L % P + i % o m > 4 W s $ I S < b ; H z
. + l j j . z E 9 0 t c j ? u 9 I X a 8
q d o 1 3 M 4 G d 9 j s $ w b ' Z x L e
F V - r H / ! b : W I d p ) I % > #
a f L 5 z E p A $ E Z ; X / r W D ^ w
; P p M 8 ( ! ` 4 , r K s @ d ( / x \ (
g > M ^ 1 t s : 9 ` 2 B d 1 Z / \ s v l F
S 8 d / C ! P T j 0 S ) x ^ t U 2
n b J + 4 ) . Q r - % S w w #
V ) y k Z ` $ 9 S V [ z P '
g F 4 k X _ i K ] ! h - o ; > b W
I D 8 N I ! " E I o H H D A < x q ,
+ B g t a . v J _ + K h g D 6 ) % v ,
a z = + 1 f : B [ ? D Q _ O a G o # ' * R s
R B ( 6 [ / b L S _ 1 M 3 # q 1 I b E m + v G
! < m & Y z A A n 4 c 0 W u 1 $ s 4 I k ^ 7 :
n Y $ z Z 5 Y < v o W o h s e [ ( / 0 k
4 E O E ] j A n l Z P + * w k ! r d x
` q R L f Q Z c ! d i y W # I t F + >
u E ' d 5 " 2 f ] y ' 6 ( W V D C [ - X u
@ E ^ D 3 > 4 Z U ' v T T 5 9 V Z q 2 =
b H ` G N q : d u S - ) l b _ D " w = * s D
N N 1 c e b y f ? - 9 0 d ^ H G ( e X Z + i :
```


4. Permanently delete **cmatrix**.

```
(kali㉿kali)-[~]  
$ sudo apt remove cmatrix  
[sudo] password for kali:  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following packages will be REMOVED:  
  cmatrix  
0 upgraded, 0 newly installed, 1 to remove and 1636 not upgraded.  
After this operation, 76.8 kB disk space will be freed.  
Do you want to continue? [Y/n] Y  
(Reading database ... 399292 files and directories currently installed.)  
Removing cmatrix (2.0-6) ...  
Processing triggers for desktop-file-utils (0.27-1) ...  
Processing triggers for hicolor-icon-theme (0.17-2) ...  
Processing triggers for man-db (2.12.0-1) ...  
Processing triggers for mailcap (3.70+nmu1) ...  
Processing triggers for kali-menu (2023.4.6) ...
```

PART 7: Ifconfig and address settings

1. Execute the **ifconfig** command.

```
(kali㉿kali)-[~]  
$ ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.0.64 netmask 255.255.255.0 broadcast 192.168.0.255  
    inet6 fd01::a00:27ff:fe4d:9727 prefixlen 64 scopeid 0x0<global>  
    inet6 fe80::a00:27ff:fe4d:9727 prefixlen 64 scopeid 0x20<link>  
    inet6 fd01::2cce:51d9:3d73:8005 prefixlen 64 scopeid 0x0<global>  
    ether 08:00:27:4d:97:27 txqueuelen 1000 (Ethernet)  
    RX packets 107 bytes 62922 (61.4 KiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 104 bytes 27934 (27.2 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
```

2. Change the output of the command to uppercase letters.

```
(kali㉿kali)-[~]
$ ifconfig | tr '[:lower:]' '[:upper:]'
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  MTU 1500
    inet 192.168.0.64  netmask 255.255.255.0  broadcast 192.168.0.255
    inet6 fd01::a00:27ff:fe4d:9727  prefixlen 64  scopeid 0x0<GLOBAL>
    inet6 fe80::a00:27ff:fe4d:9727  prefixlen 64  scopeid 0x20<LINK>
    inet6 fd01::2cce:51d9:3d73:8005  prefixlen 64  scopeid 0x0<GLOBAL>
    ether 08:00:27:4d:97:27  txqueuelen 1000  (ETHERNET)
    RX packets 211  bytes 72016 (70.3 KIB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 138  bytes 31674 (30.9 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
```

3. Filter the command to display only the IP and subnet mask.

```
(kali㉿kali)-[~]
$ ifconfig | grep inet | grep netmask
inet 192.168.0.81  netmask 255.255.255.0  broadcast 192.168.0.255
inet 127.0.0.1  netmask 255.0.0.0
```

4. Write the output to a file called "ip.log".

```
(kali㉿kali)-[~]
$ ifconfig > ip.log

(kali㉿kali)-[~]
$ ls -l
total 36
drwxr-xr-x 2 kali kali 4096 May 12  2022 Desktop
drwxr-xr-x 2 kali kali 4096 May 12  2022 Documents
drwxr-xr-x 2 kali kali 4096 May 12  2022 Downloads
-rw-r--r-- 1 kali kali 1028 Apr 24 13:36 ip.log
drwxr-xr-x 2 kali kali 4096 May 12  2022 Music
drwxr-xr-x 2 kali kali 4096 May 12  2022 Pictures
drwxr-xr-x 2 kali kali 4096 May 12  2022 Public
drwxr-xr-x 2 kali kali 4096 May 12  2022 Templates
drwxr-xr-x 2 kali kali 4096 May 12  2022 Videos

(kali㉿kali)-[~]
$ cat ip.log
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 192.168.0.81  netmask 255.255.255.0  broadcast 192.168.0.255
    inet6 fd01::a00:27ff:fed1:c147  prefixlen 64  scopeid 0x0<global>
    inet6 fe80::a00:27ff:fed1:c147  prefixlen 64  scopeid 0x20<link>
    inet6 fd01::2d97:9b7d:49d4:e233  prefixlen 64  scopeid 0x0<global>
    ether 08:00:27:d1:c1:47  txqueuelen 1000  (Ethernet)
    RX packets 1651005  bytes 2495544302 (2.3 GiB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 312029  bytes 24430238 (23.2 MiB)
    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 0  bytes 0 (0.0 B)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 0  bytes 0 (0.0 B)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
```


5. Add to the "ip.log" file the following: whoami, last, and hostname.

```
(kali㉿kali)-[~]  
$ whoami >> ip.log
```

```
(kali㉿kali)-[~]  
$ last >> ip.log
```

```
(kali㉿kali)-[~]  
$ hostname >> ip.log
```

```
GNU nano 7.2  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.0.81 netmask 255.255.255.0 broadcast 192.168.0.255  
    inet6 fd01::a00:27ff:fed1:c147 prefixlen 64 scopeid 0x0<global>  
    inet6 fe80::a00:27ff:fed1:c147 prefixlen 64 scopeid 0x20<link>  
    inet6 fd01::2d97:9b7d:49d4:e233 prefixlen 64 scopeid 0x0<global>  
    ether 08:00:27:d1:c1:47 txqueuelen 1000 (Ethernet)  
    RX packets 1651037 bytes 2495547076 (2.3 GiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 312043 bytes 24431778 (23.2 MiB)  
    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 0 bytes 0 (0.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 0 bytes 0 (0.0 B)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
kali  
kali    tty7          :0                Wed Apr 24 12:35    still logged in  
reboot  system boot    5.16.0-kali7-amd Wed Apr 24 12:35    still running  
kali    tty7          :0                Wed Apr 24 12:30 - crash (00:04)  
reboot  system boot    5.16.0-kali7-amd Wed Apr 24 12:29    still running  
kali    tty7          :0                Sat Apr 13 03:44 - crash (11+08:45)  
reboot  system boot    5.16.0-kali7-amd Sat Apr 13 03:44    still running  
kali    tty7          :0                Sat Feb 24 07:39 - 07:40 (00:00)  
reboot  system boot    5.16.0-kali7-amd Sat Feb 24 07:39 - 07:40 (00:01)  
kali    tty7          :0                Thu May 12 12:19 - 12:35 (00:15)  
reboot  system boot    5.16.0-kali7-amd Thu May 12 11:57 - 12:35 (00:38)  
  
wtmp begins Thu May 12 11:57:32 2022  
kali
```

6. Set a static IP in the terminal.

```
(kali㉿kali)-[~]
└─$ sudo ip address add 192.168.1.95/24 dev eth0
[sudo] password for kali:

(kali㉿kali)-[~]
└─$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:d1:c1:47 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.81/24 brd 192.168.0.255 scope global dynamic noprefixroute eth0
        valid_lft 81541sec preferred_lft 81541sec
    inet 192.168.1.95/24 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fd01::2d97:9b7d:49d4:e233/64 scope global temporary dynamic
        valid_lft 264sec preferred_lft 264sec
    inet6 fd01::a00:27ff:fed1:c147/64 scope global dynamic mngtmpaddr noprefixroute
        valid_lft 264sec preferred_lft 264sec
    inet6 fe80::a00:27ff:fed1:c147/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

PART 8: Remote control and Telnet Services

1. Install telnet on the operation system.

```
(root㉿kali)-[~]
└─# apt-get install xinetd telnetd
Reading package lists ... Done
Building dependency tree ... Done
Reading state information ... Done
The following packages were automatically installed and are no longer required:
  cython3 debtags kali-debtags libadwaita-1-0 libaio1 libappstream5 libatk-adaptor libboost-dev
  libboost1.74-dev libhiredis0.14 libjavascriptcoregtk-4.0-18 libopenblas-dev
  libopenblas-pthread-dev libopenblas0 libperl5.36 libpython3-all-dev libpython3.12
  libpython3.12-dev libqt5multimedia5 libqt5multimedia5-plugins libqt5multimediagsttools5
  libqt5multimediawidgets5 librtlsdr0 libstemmer0 libuc11 libwebkit2gtk-4.0-37 libxmlb2
  libxsimd-dev libzxing2 perl-modules-5.36 python3-all-dev python3-backcall python3-beniget
  python3-debian python3-future python3-gast python3-pickleshare python3-pyatspi python3-pypdf2
  python3-pyppeteer python3-pyrsistent python3-pythran python3-requests-toolbelt python3-rfc3986
  python3-unicodedcsv python3.12-dev tcpd xtl-dev zenity zenity-common
Use 'apt autoremove' to remove them.
The following packages will be REMOVED:
  inetutils-inetd
The following NEW packages will be installed:
  telnetd xinetd
```

2. Restart the service.

```
(root㉿kali)-[~]
└─# service xinetd stop

(kali㉿kali)-[~]
└─# service xinetd start
```

3. Check the status of the service.

```
(root㉿kali)-[~]
└─# service xinetd status
● xinetd.service - Xinetd A Powerful Replacement For Inetd
   Loaded: loaded (/usr/lib/systemd/system/xinetd.service; disabled; preset: disabled)
   Active: active (running) since Wed 2024-04-24 21:35:14 CEST; 53s ago
     Docs: man:xinetd
           man:xinetd.conf
           man:xinetd.log
    Main PID: 147442 (xinetd)
      Tasks: 1 (limit: 4597)
     Memory: 428.0K (peak: 628.0K)
        CPU: 50ms
      CGroup: /system.slice/xinetd.service
              └─147442 /usr/sbin/xinetd -stayalive -dontfork
```

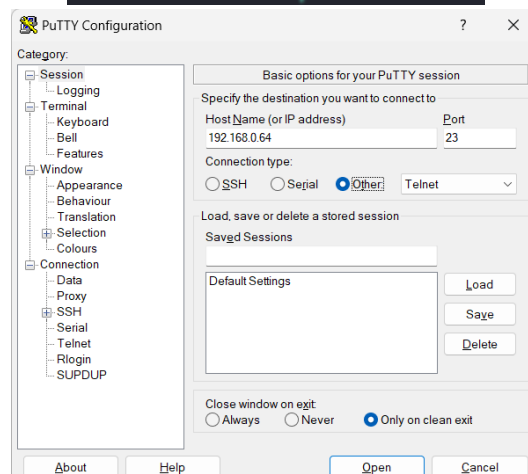
4. In the Windows machine, use puTTY to connect to the Kali machine.

```
(root@kali)-[~]  
# nano /etc/xinetd.d/telnet
```

```
GNU nano 7.2  
service telnet  
{  
  flags = REUSE  
  socket_type = stream  
  wait = no  
  user = root  
  server = /usr/sbin/telnetd  
  log_on_failure += USERID  
  disable = no  
}
```

```
(root@kali)-[~]  
# nmap 192.168.0.64  
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-04-25 18:41 CEST  
Nmap scan report for kali.maxnet.net.pl (192.168.0.64)  
Host is up (0.0000010s latency).  
Not shown: 999 closed tcp ports (reset)  
PORT      STATE SERVICE  
23/tcp    open  telnet  
  
Nmap done: 1 IP address (1 host up) scanned in 0.18 seconds
```

```
(root@kali)-[~]  
# ss -nltp 23
```



```
kali@kali: ~  
  
Linux 6.5.0-kali3-amd64 (kali) (pts/4)  
  
kali login: kali  
Password:  
Linux kali 6.5.0-kali3-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.5.6-1kali1 (2023-10-09) x86_64  
  
The programs included with the Kali GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Kali GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
  
(kali@kali)-[~]  
$ pwd  
/home/kali  
  
(kali@kali)-[~]  
$
```

5. Create directories and files to verify that the connection works.

```
(kali@kali)-[~]  
$ mkdir FOLDERZPUTTY1 FOLDERZPUTTY2  
  
(kali@kali)-[~]  
$ ls -l  
total 40  
drwxr-xr-x 2 kali kali 4096 Feb 24 12:06 Desktop  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Documents  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Downloads  
drwxr-xr-x 2 kali kali 4096 Apr 24 21:52 FOLDERZPUTTY1  
drwxr-xr-x 2 kali kali 4096 Apr 24 21:52 FOLDERZPUTTY2  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Music  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Pictures  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Public  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Templates  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Videos  
  
(kali@kali)-[~]  
$ touch plik1.txt plik2.txt  
  
(kali@kali)-[~]  
$ ls -l  
total 40  
drwxr-xr-x 2 kali kali 4096 Feb 24 12:06 Desktop  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Documents  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Downloads  
drwxr-xr-x 2 kali kali 4096 Apr 24 21:52 FOLDERZPUTTY1  
drwxr-xr-x 2 kali kali 4096 Apr 24 21:52 FOLDERZPUTTY2  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Music  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Pictures  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Public  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Templates  
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Videos  
-rw-r--r-- 1 kali kali 0 Apr 24 21:53 plik1.txt  
-rw-r--r-- 1 kali kali 0 Apr 24 21:53 plik2.txt
```

```

(kali㉿kali)-[~]
$ ls -l
total 40
drwxr-xr-x 2 kali kali 4096 Feb 24 12:06 Desktop
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Documents
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Downloads
drwxr-xr-x 2 kali kali 4096 Apr 24 21:52 FOLDERZPUTTY1
drwxr-xr-x 2 kali kali 4096 Apr 24 21:52 FOLDERZPUTTY2
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Music
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Pictures
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Public
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Templates
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Videos
-rw-r--r-- 1 kali kali 0 Apr 24 21:53 plik1.txt
-rw-r--r-- 1 kali kali 0 Apr 24 21:53 plik2.txt

```

PART 9: SSH Connection

1. Start the SSH service and verify that the service runs.

```

(kali㉿kali)-[~]
$ sudo service ssh start
[sudo] password for kali:

(kali㉿kali)-[~]
$ sudo service ssh status
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; preset: disabled)
   Active: active (running) since Thu 2024-04-25 18:19:37 CEST; 7s ago
     Docs: man:sshd(8)
           man:sshd_config(5)
   Process: 1987 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
    Main PID: 1988 (sshd)
       Tasks: 1 (limit: 4610)
      Memory: 2.8M (peak: 3.1M)
         CPU: 21ms
    CGroup: /system.slice/ssh.service
            └─1988 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Apr 25 18:19:37 kali systemd[1]: Starting ssh.service - OpenBSD Secure Shell server ...
Apr 25 18:19:37 kali sshd[1988]: Server listening on 0.0.0.0 port 22.
Apr 25 18:19:37 kali sshd[1988]: Server listening on :: port 22.
Apr 25 18:19:37 kali systemd[1]: Started ssh.service - OpenBSD Secure Shell server.

```

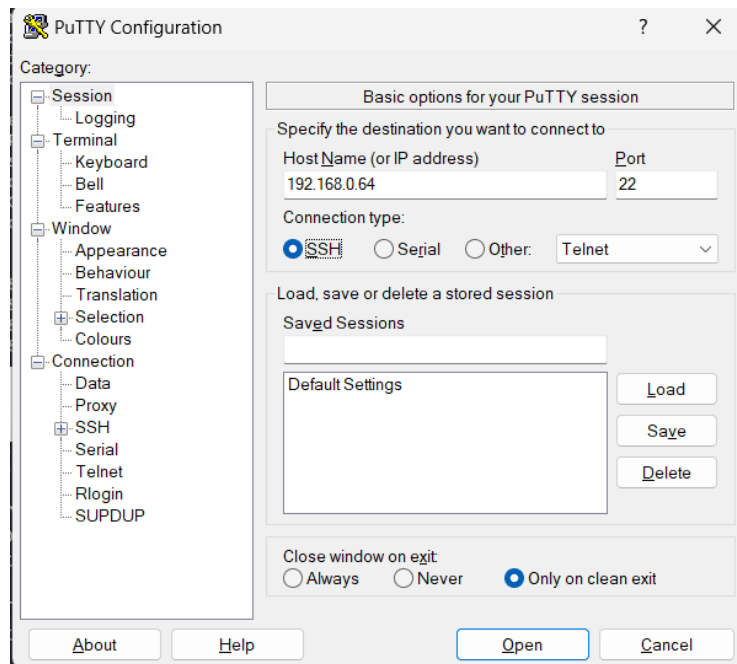
2. Connect via puTTY to the Linux machine.

```

(kali㉿kali)-[~]
$ nmap 192.168.0.64
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-04-25 18:26 CEST
Nmap scan report for kali.maxnet.net.pl (192.168.0.64)
Host is up (0.000058s latency).
Not shown: 999 closed tcp ports (conn-refused)
PORT      STATE SERVICE
22/tcp    open  ssh

Nmap done: 1 IP address (1 host up) scanned in 0.08 seconds

```



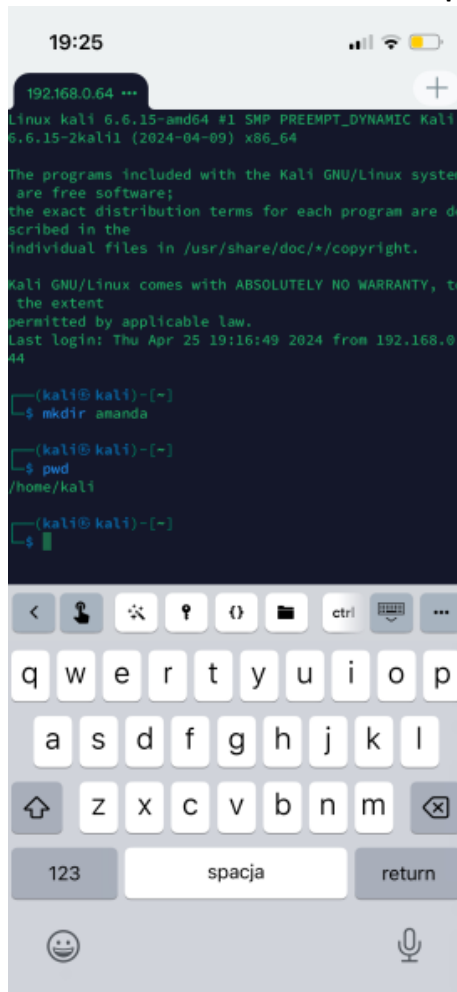
```
kali@kali: ~  
login as: kali  
kali@192.168.0.64's password:  
Linux kali 6.6.15-amd64 #1 SMP PREEMPT_DYNAMIC Kali 6.6.15-2kali1 (2024-04-09) x86_64  
  
The programs included with the Kali GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Kali GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Wed Apr 24 21:48:28 2024 from DELLP.maxnet.net.pl  
kali@kali:~$
```

3. Connect to Kali Linux with MOBA.

```
25/04/2024 19:01.02 /home/mobaxterm ping 192.168.0.64  
Pinging 192.168.0.64 with 32 bytes of data:  
Reply from 192.168.0.64: bytes=32 time<1ms TTL=64  
Reply from 192.168.0.64: bytes=32 time=1ms TTL=64  
Reply from 192.168.0.64: bytes=32 time<1ms TTL=64  
  
25/04/2024 19:01.27 /home/mobaxterm ssh kali@192.168.0.64 -p 22  
Warning: Permanently added '192.168.0.64' (ED25519) to the list of known hosts.  
kali@192.168.0.64's password:  
Linux kali 6.6.15-amd64 #1 SMP PREEMPT_DYNAMIC Kali 6.6.15-2kali1 (2024-04-09) x86_64  
  
The programs included with the Kali GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Kali GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Thu Apr 25 18:46:07 2024 from 192.168.0.44  
kali@kali:~$ pwd  
/home/kali
```


4. Connect to the Kali Machine from your phone.

Connection established via Tominus app.



5. Run Wireshark and inspect the information that is displayed about the connection.

No.	Time	Source	Destination	Protocol
1	0.000000000	iRobot_41:ae:72	Broadcast	ARP
2	5.850222436	192.168.0.63	192.168.0.64	SSH
3	5.850256161	192.168.0.64	192.168.0.63	TCP
4	6.032919105	192.168.0.63	192.168.0.64	TCP
5	6.032958062	192.168.0.64	192.168.0.63	TCP
6	7.717230646	192.168.0.63	192.168.0.64	SSH
7	7.717367374	192.168.0.64	192.168.0.63	TCP
8	7.723449891	192.168.0.64	192.168.0.63	SSH
9	7.723758841	192.168.0.64	192.168.0.63	SSH
10	7.736898328	192.168.0.63	192.168.0.64	TCP
11	7.742011454	192.168.0.63	192.168.0.64	TCP
12	7.783025807	192.168.0.63	192.168.0.64	SSH
13	7.787157974	192.168.0.64	192.168.0.63	SSH
14	7.794668339	192.168.0.63	192.168.0.64	TCP
15	8.052874683	192.168.0.63	192.168.0.64	SSH
16	8.055890120	192.168.0.64	192.168.0.63	SSH

We can observe connection between my phone (IP 192.168.0.63) and ssh server 192.168.0.64

PART 10: Apache Web Server

1. Change the index file to a website of your choice. Verify that the site works.

```
(root@kali)-[/var/www/html]
# mv index.html /

(root@kali)-[/var/www/html]
# cd /

(root@kali)-[/]
# ls
bin boot dev etc home index.html initrd.img initrd.img.old lib lib32
```

```
(root@kali)-[/var/www/html]
# nano index.html
```

```
GNU nano 7.2
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Moja Podstawowa Strona</title>
  <style>
    body {
      font-family: Arial, sans-serif;
      margin: 0;
      padding: 0;
      background-color: #f0f0f0;
    }
    header {
      background-color: #333;
      color: #fff;
      padding: 10px;
      text-align: center;
    }
    nav {
      background-color: #666;
      color: #fff;
      padding: 10px;
      text-align: center;
    }
    nav a {
      color: #fff;
      text-decoration: none;
      margin: 0 10px;
    }
    section {
      padding: 20px;
    }
    footer {
      background-color: #333;
      color: #fff;
      padding: 10px;
      text-align: center;
      position: absolute;
      bottom: 0;
      width: 100%;
    }
  </style>
</head>
<body>
  <header>
    <h1>Witaj na Mojej Stronie</h1>
```

← → ↻ ⚠ Niezabezpieczona 192.168.0.64

Witaj na Mojej Stronie

[Strona główna](#) [O nas](#) [Kontakt](#)

O nas

Strona stworzona na potrzeby zadania.

PART 11: VSFTPD

1. Download the latest version of VSFTPD. ~

```
(root@kali)-[~]
# apt install vsftpd
Reading package lists... Done
Building dependency tree ... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  cython3 debtags kali-debtags libadwaita-1-0 libaiol libappstream5 libatk-adaptor libboost-dev
  libboost1.74-dev libhiredis0.14 libjavascriptcoregtk-4.0-18 libopenblas-dev
  libopenblas-pthread-dev libopenblas0 libperl5.36 libpython3-all-dev libpython3.12
  libpython3.12-dev libqt5multimedia5 libqt5multimedia5-plugins libqt5multimedia5gsttools5
  libqt5multimedia5widgets5 librtlsdr0 libstemmer0d libuc11 libwebkit2gtk-4.0-37 libxmlb2
  libxsimd-dev libzxing2 perl-modules-5.36 python3-all-dev python3-backcall python3-beniget
  python3-debian python3-future python3-gast python3-pickleshare python3-pyatspi python3-pypdf2
  python3-pyppeteer python3-pyrsistent python3-pythran python3-requests-toolbelt python3-rfc3986
  python3-unicodedcsv python3.12-dev tcpd xtl-dev zenity zenity-common
Use 'apt autoremove' to remove them.
The following NEW packages will be installed:
  vsftpd
0 upgraded, 1 newly installed, 0 to remove and 42 not upgraded.
Need to get 143 kB of archives.
After this operation, 353 kB of additional disk space will be used.
Get:1 http://http.kali.org/kali kali-rolling/main amd64 vsftpd amd64 3.0.3-13+b3 [143 kB]
Fetched 143 kB in 1s (171 kB/s)
Preconfiguring packages ...
Selecting previously unselected package vsftpd.
(Reading database ... 420813 files and directories currently installed.)
Preparing to unpack .../vsftpd_3.0.3-13+b3_amd64.deb ...
Unpacking vsftpd (3.0.3-13+b3) ...
Setting up vsftpd (3.0.3-13+b3) ...
update-rc.d: We have no instructions for the vsftpd init script.
update-rc.d: It looks like a network service, we disable it.
Processing triggers for man-db (2.12.0-3) ...
Processing triggers for kali-menu (2023.4.7) ...
```

2. Configure VSFTPD and run the service.

```
(root@kali)-[~]
# service vsftpd status
● vsftpd.service - vsftpd FTP server
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; preset: disabled)
   Active: inactive (dead)

(root@kali)-[~]
# service vsftpd start

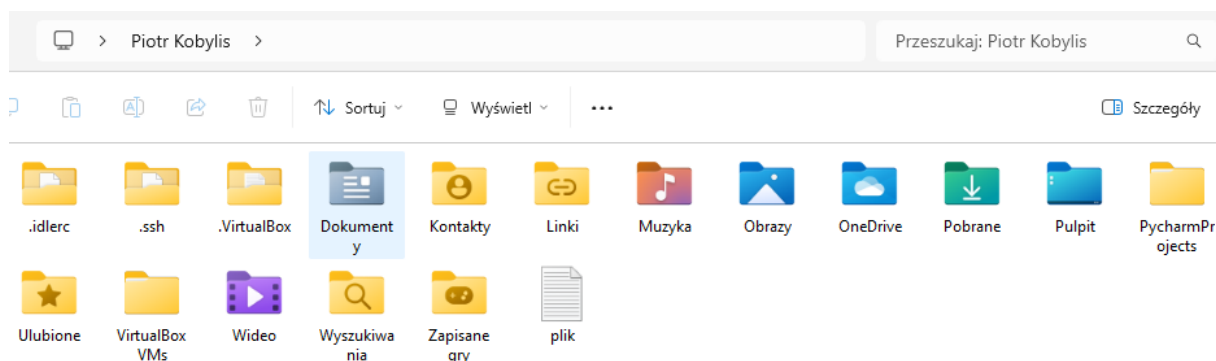
(root@kali)-[~]
# service vsftpd status
● vsftpd.service - vsftpd FTP server
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; preset: disabled)
   Active: active (running) since Thu 2024-04-25 20:47:37 CEST; 2s ago
     Process: 76028 ExecStartPre=/bin/mkdir -p /var/run/vsftpd/empty (code=exited, status=0/SUCCESS)
    Main PID: 76029 (vsftpd)
       Tasks: 1 (limit: 4610)
      Memory: 736.0K (peak: 1.5M)
         CPU: 12ms
        CGroup: /system.slice/vsftpd.service
                └─76029 /usr/sbin/vsftpd /etc/vsftpd.conf

Apr 25 20:47:37 kali systemd[1]: Starting vsftpd.service - vsftpd FTP server...
Apr 25 20:47:37 kali systemd[1]: Started vsftpd.service - vsftpd FTP server.
```

3. Transfer a file from the Kali machine to the Windows machine.

```
C:\Users\piotr> ftp 192.168.0.64
Connected to 192.168.0.64.
220 (vsFTPd 3.0.3)
200 Always in UTF8 mode.
User (192.168.0.64:(none)): kali
331 Please specify the password.
Password:

230 Login successful.
ftp> pwd
257 "/home/kali" is the current directory
ftp> get plik.txt
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for plik.txt (0 bytes).
226 Transfer complete.
ftp> |
```



4. Run Wireshark and reconnect to the FTP server (Kali machine). Try to find the password and explain why the password is in plaintext.

21	12.118540890	192.168.0.44	192.168.0.64	FTP	65 Request: USER kali
22	12.118701291	192.168.0.64	192.168.0.44	FTP	88 Response: 331 Please specify the password.
23	12.160311089	192.168.0.44	192.168.0.64	TCP	60 53991 → 21 [ACK] Seq=26 Ack=81 Win=8112 Len=0
24	14.020731243	DLinkInterna_c3:87:...	Broadcast	ARP	60 Who has 192.168.0.18? Tell 192.168.0.1
25	14.204363378	192.168.0.44	192.168.0.64	FTP	65 Request: PASS kali

FTP doesn't have encryption so it's always plaintext.

PART 12: Gzip

1. Locate a gzip file on the file system (gz extension).

```
(kali㉿kali)-[~]
$ sudo find / -type f -name "*.gz"
find: '/run/user/1000/gvfs': Permission denied
/etc/console-setup/cached_UTF-8_del.kmap.gz
/etc/console-setup/cached_Lat15-Fixed16.psf.gz
/usr/local/share/man/man1/pwsh.1.gz
/usr/share/info/grep.info.gz
/usr/share/info/flex.info-2.gz
/usr/share/info/hexeditor.info.gz
/usr/share/info/grub.info-2.gz
/usr/share/info/m4.info.gz
/usr/share/info/nano.info.gz
/usr/share/info/grub.info-1.gz
```

2. Extract the files from a particular gz file.

```
(kali㉿kali)-[~]
$ sudo gunzip /usr/share/info/grep.info.gz
```

```
(root㉿kali)-[/usr/share/info]
# find . -name "grep*"
./grep.info
```

3. Create four files and move them to a gzip file.

```
(root㉿kali)-[/home/kali]
# touch plik1.txt plik2.txt plik3.txt plik4.txt ; tar -czvf pliki.tar.gz *.txt
plik1.txt
plik2.txt
plik3.txt
plik4.txt

(root㉿kali)-[/home/kali]
# ls -l
total 36
drwxr-xr-x 2 kali kali 4096 Feb 24 12:06 Desktop
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Documents
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Downloads
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Music
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Pictures
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Public
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Templates
drwxr-xr-x 2 kali kali 4096 Feb 24 11:41 Videos
-rw-r--r-- 1 root root 0 Apr 26 20:25 plik1.txt
-rw-r--r-- 1 root root 0 Apr 26 20:25 plik2.txt
-rw-r--r-- 1 root root 0 Apr 26 20:25 plik3.txt
-rw-r--r-- 1 root root 0 Apr 26 20:25 plik4.txt
-rw-r--r-- 1 root root 142 Apr 26 20:25 pliki.tar.gz
```

PART 13: Questions

1. What are root folders? Choose three and explain about them.

It's a bunch of directories where are storage all system files. For example in directories such as:

- Home – we can find all users catalogues
- Etc – configuration files (“everything to configure”)
- Srv – data of services running on the system

2. Explain the following terms:

- Encoding - process of converting data, information or an instruction into a particular form.
- Hashing - process of transforming and assigning a numeric string to a piece of data by applying a function whose output values are all the same number of bits in length.
- Symmetric Encryption – an algorithm that encrypt and decrypt plaintext by using the same keys.
- Asymmetric Encryption – process that uses a pair of related keys -- one public key and one private key -- to encrypt and decrypt a message and protect it from unauthorized access or use.

3. When enabling SSH, usually, the configuration file needs to be changed.

- Why?

Security Settings: SSH configuration files allow administrators to specify security settings such as which users are allowed to connect, what authentication methods are permitted (passwords, public keys, etc.), and which IP addresses or ranges are allowed to connect.

Port Configuration: Administrators can modify the configuration file to specify a different port for SSH connections. It's recommended to change SSH port from 22 to another.

Protocol Versions: Administrators can configure the SSH server to only accept SSH2 connections by modifying the configuration file. SSH2 is more secure and recommended over SSH1 due to various vulnerabilities found in SSH1.

Logging and Monitoring: Modifying these settings helps in auditing and troubleshooting SSH connections. Configuration files allow administrators to specify logging and monitoring settings for SSH connections.

Customization and Optimization: Administrators can tweak parameters such as connection timeouts, encryption algorithms, compression settings, and more to optimize SSH performance and security. SSH configuration files offer a range of options for customization and optimization based on specific system requirements and preferences.

4. What is the kernel?

The kernel is a computer program at the core of a computer's operating system and generally has complete control over every task in the system.

5. What should be performed to create a connection between two virtual machines?

Explain each step.

- Set Network Setting in both machines to Bridge – it allows those two machines to “see” each other.
- Display IP addresses of those machines and ping them. To check if they can communicate.
- Run on one of the machine, server service, for example SSH and configurate it.
- Check service status
- Check open ports. For SSH by default it's 22
- Connect client machine with server machine by using command `ssh username@IP_address_of_the_server`.
- Server will ask for password to log in to user account.
- Connection supposed to be established between particular user and the server.

6. What is ping?

A ping is a basic Internet program that allows a user to test and verify if a particular destination IP address exists and respond.

7. When granting permissions over files and folders, we use three numbers. What are the numbers and what do they mean? Why do we write them three times (777)?

Each number is assigned to particular permission as follows:

-rwx – 7 permission to read, write and execute

- r – 4 permission to read;

- w – 2 permission to write

- x – 1 permission to execute

In total those three permissions give 7 the highest type.

During granting permissions we have to define what kind of mentioned permission we want to assign to user / group / others. For example if we want to grant all permissions to user/ group / and other then we define it as 777.

8. Can we create two folders with the same name, one in lowercase letters and the other in uppercase letters?

Yes, we can

9. Define the following concepts.

- Telnet - a network protocol that allows a user on one computer to log into another computer that is part of the same network.

- SSH - The Secure Shell Protocol (SSH) is a cryptographic network protocol for operating network services securely over an unsecured network. Its most notable applications are remote login and command-line execution.
- Crontab - Crontab, which is short for cron table, is a file containing the schedule of various cron entries that should be run at specified times.
- FTP - standard communication protocol used for the transfer of computer files from a server to a client on a computer network.
- SFTP - a network protocol that provides file access, file transfer, and file management over any reliable data stream.
- Gzip tar - gzip compresses only a single file and is therefore often used in combination with the Unix tar utility when more than one file must be compressed. Tar combines multiple files into one archive, and gzip compresses that single archive, creating a file with the extension .tar.
- Bash - command processor that typically runs in a text window where the user types commands that cause actions. Bash can also read and execute commands from a file, called a shell script.
- Apache - HTTP Server is a free and open-source web server that delivers web content through the internet. It is commonly referred to as Apache and after development, it quickly became the most popular HTTP client on the web.