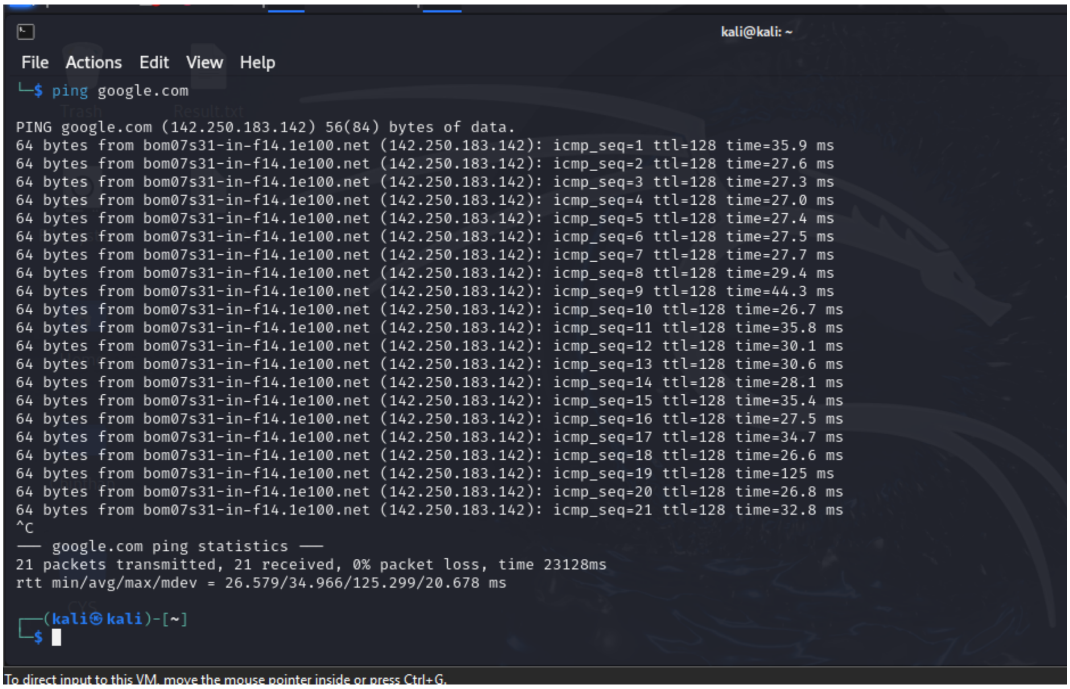
Lab_8 Assignment

1. Network Commands:

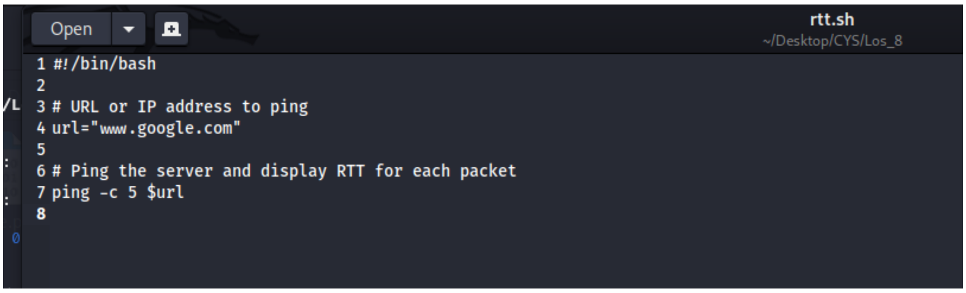
1. Use the ping command to test the connectivity to a remote server (e.g., example.com).



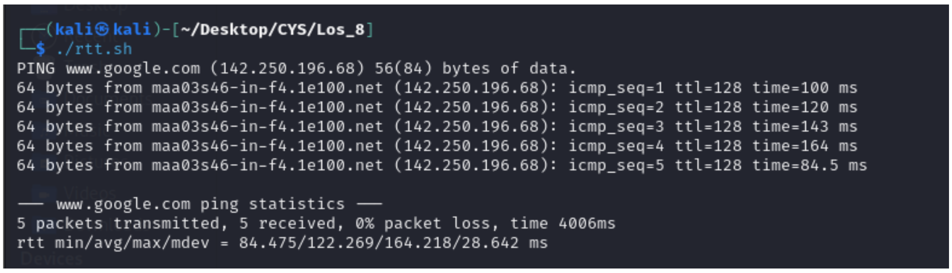
```
└─$ ping google.com

PING google.com (142.250.183.142) 56(84) bytes of data.
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=1 ttl=128 time=35.9 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=2 ttl=128 time=27.6 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=3 ttl=128 time=27.3 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=4 ttl=128 time=27.0 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=5 ttl=128 time=27.4 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=6 ttl=128 time=27.5 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=7 ttl=128 time=27.7 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=8 ttl=128 time=29.4 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=9 ttl=128 time=44.3 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=10 ttl=128 time=26.7 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=11 ttl=128 time=35.8 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=12 ttl=128 time=30.1 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=13 ttl=128 time=30.6 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=14 ttl=128 time=28.1 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=15 ttl=128 time=35.4 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=16 ttl=128 time=27.5 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=17 ttl=128 time=34.7 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=18 ttl=128 time=26.6 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=19 ttl=128 time=125 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=20 ttl=128 time=26.8 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=21 ttl=128 time=32.8 ms
^C
── google.com ping statistics ──
21 packets transmitted, 21 received, 0% packet loss, time 23128ms
rtt min/avg/max/mdev = 26.579/34.966/125.299/20.678 ms

┌──(kali㉿kali)-[~]
└─$ █
```

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

2. Write a script to measure the round-trip time for each packet and analyze the results.

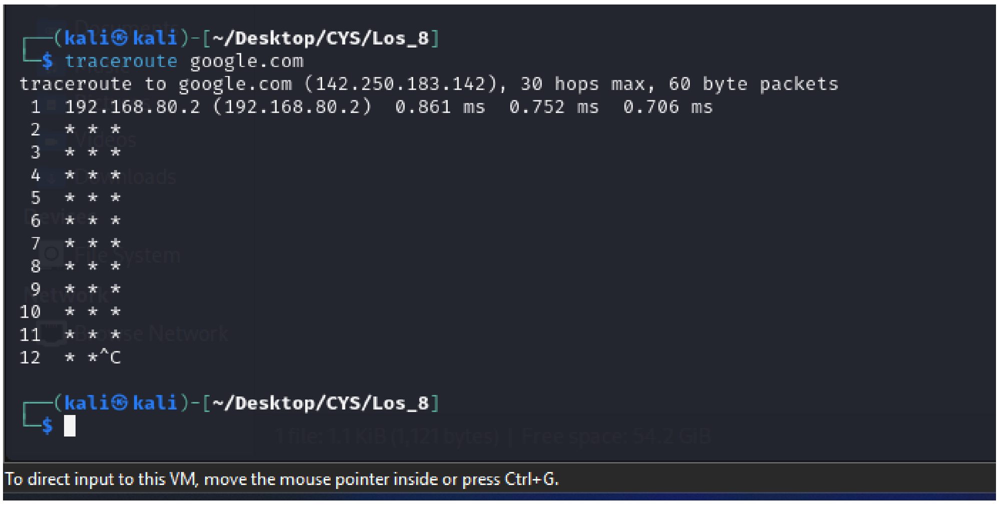


```
#!/bin/bash

# URL or IP address to ping
url="www.google.com"

# Ping the server and display RTT for each packet
ping -c 5 $url

```



```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ ./rtt.sh
PING www.google.com (142.250.196.68) 56(84) bytes of data.
64 bytes from maa03s46-in-f4.1e100.net (142.250.196.68): icmp_seq=1 ttl=128 time=100 ms
64 bytes from maa03s46-in-f4.1e100.net (142.250.196.68): icmp_seq=2 ttl=128 time=120 ms
64 bytes from maa03s46-in-f4.1e100.net (142.250.196.68): icmp_seq=3 ttl=128 time=143 ms
64 bytes from maa03s46-in-f4.1e100.net (142.250.196.68): icmp_seq=4 ttl=128 time=164 ms
64 bytes from maa03s46-in-f4.1e100.net (142.250.196.68): icmp_seq=5 ttl=128 time=84.5 ms

── www.google.com ping statistics ──
5 packets transmitted, 5 received, 0% packet loss, time 4006ms
rtt min/avg/max/mdev = 84.475/122.269/164.218/28.642 ms
```

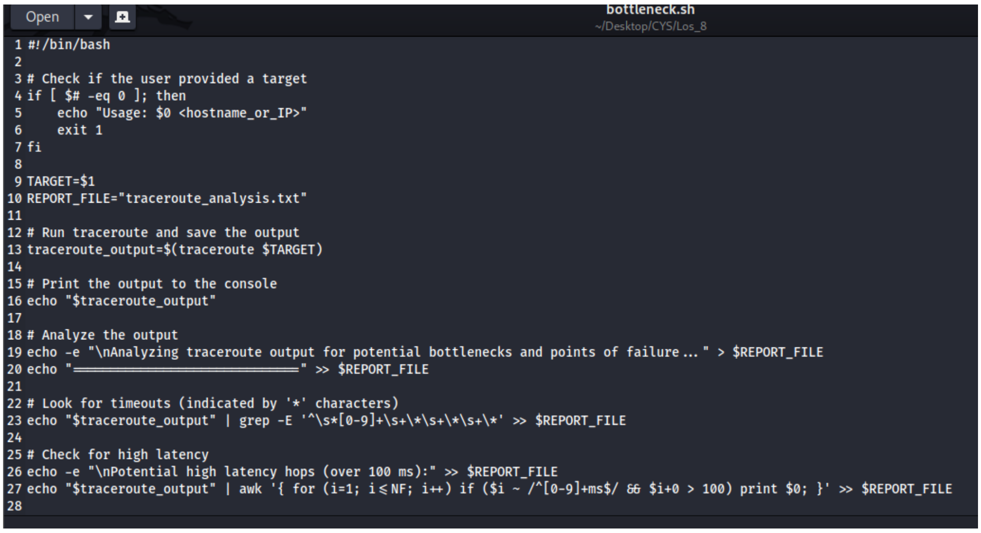
3. Use the traceroute to trace the route packets take to a destination



```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ traceroute google.com
traceroute to google.com (142.250.183.142), 30 hops max, 60 byte packets
 1  192.168.80.2 (192.168.80.2)  0.861 ms  0.752 ms  0.706 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * *^C

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ 
```

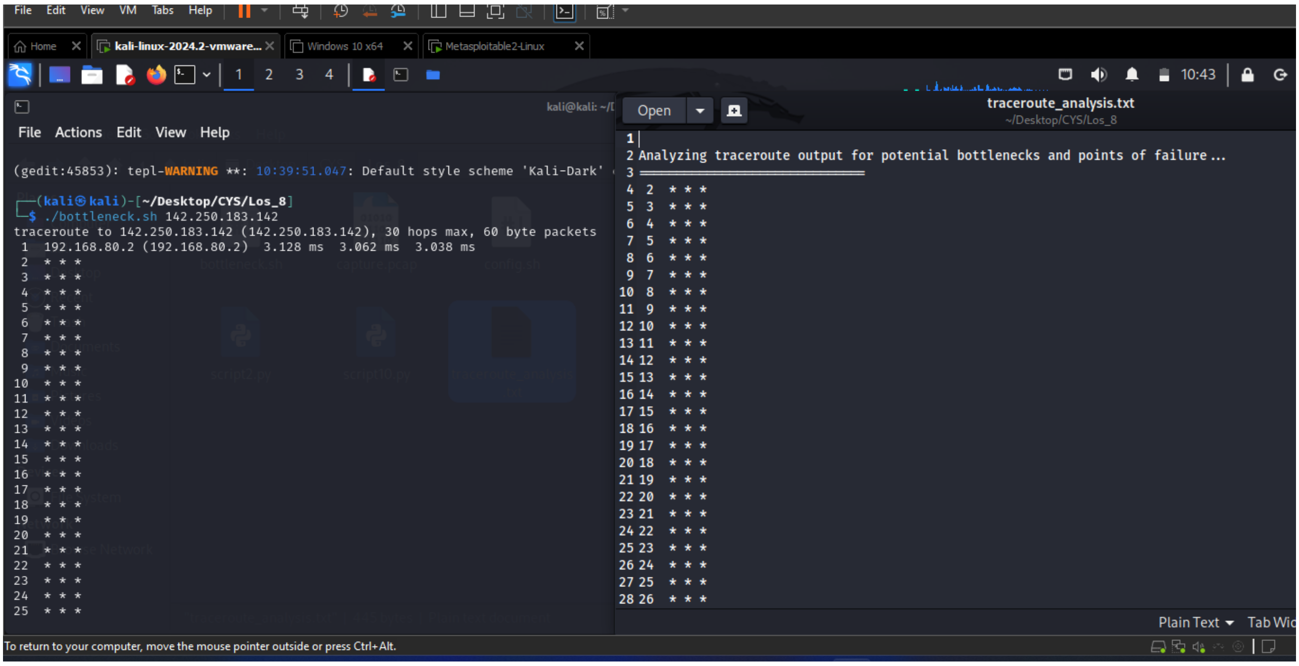
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

4. Analyze the output to identify any potential bottlenecks or points of failure in the route.



bottleneck.sh
~/Desktop/CYS/Los_8

```bash
#!/bin/bash

# Check if the user provided a target
if [ $# -eq 0 ]; then
    echo "Usage: $0 <hostname_or_IP>"
    exit 1
fi

TARGET=$1
REPORT_FILE="traceroute_analysis.txt"

# Run traceroute and save the output
traceroute_output=$(traceroute $TARGET)

# Print the output to the console
echo "$traceroute_output"

# Analyze the output
echo -e "\nAnalyzing traceroute output for potential bottlenecks and points of failure..." > $REPORT_FILE
echo "==============================" >> $REPORT_FILE

# Look for timeouts (indicated by '*' characters)
echo "$traceroute_output" | grep -E '^\s*[0-9]+\s+\*\s+\*\s+\*' >> $REPORT_FILE

# Check for high latency
echo -e "\nPotential high latency hops (over 100 ms):" >> $REPORT_FILE
echo "$traceroute_output" | awk '{ for (i=1; i<=NF; i++) if ($i ~ /^[0-9]+ms$/ && $i+0 > 100) print $0; }' >> $REPORT_FILE

```



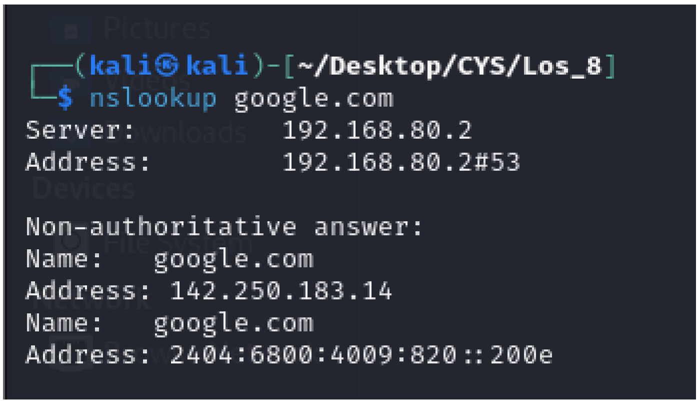
```
(gedit:45853): tepl-WARNING **: 10:39:51.047: Default style scheme 'Kali-Dark'

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ ./bottleneck.sh 142.250.183.142
traceroute to 142.250.183.142 (142.250.183.142), 30 hops max, 60 byte packets
 1  192.168.80.2 (192.168.80.2)  3.128 ms  3.062 ms  3.038 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
```

traceroute_analysis.txt
~/Desktop/CYS/Los_8

```

Analyzing traceroute output for potential bottlenecks and points of failure...
================================
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
26  * * *
```

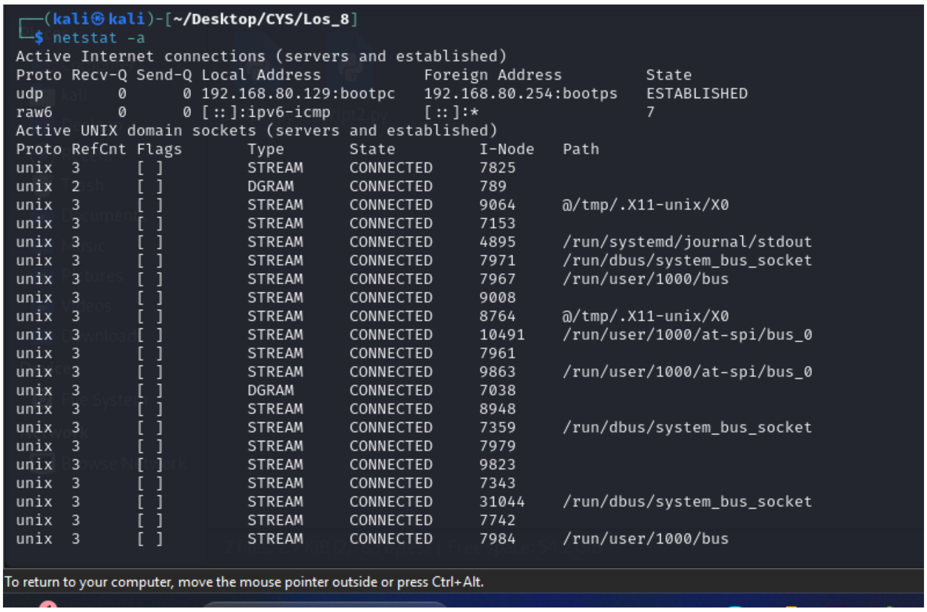
To return to your computer, move the mouse pointer outside or press Ctrl+Alt.

5. Use the nslookup command to find the IP address of a given domain (e.g., example.com).



```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ nslookup google.com
Server:         192.168.80.2
Address:        192.168.80.2#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.183.14
Name:   google.com
Address: 2404:6800:4009:820::200e
```

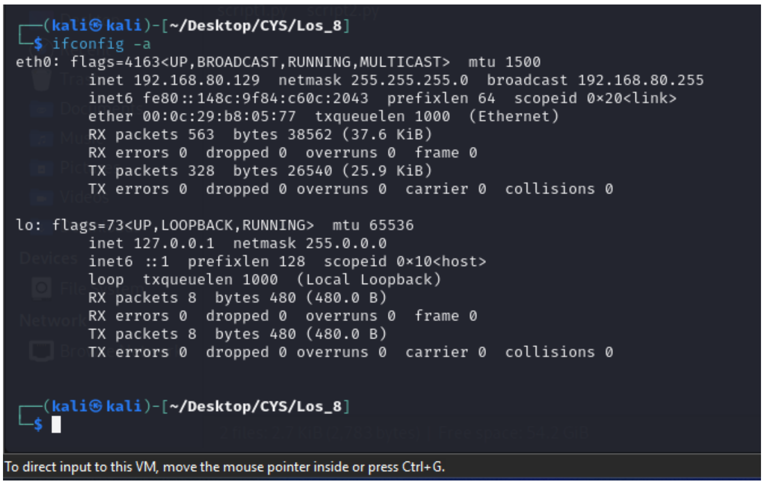
6. Use the netstat command to view active connections and listening ports on your machine.



```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 192.168.80.129:bootpc   192.168.80.254:bootps   ESTABLISHED
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  3      [ ]         STREAM     CONNECTED     7825
unix  2      [ ]         DGRAM      CONNECTED     789
unix  3      [ ]         STREAM     CONNECTED     9064     @/tmp/.X11-unix/X0
unix  3      [ ]         STREAM     CONNECTED     7153
unix  3      [ ]         STREAM     CONNECTED     4895     /run/systemd/journal/stdout
unix  3      [ ]         STREAM     CONNECTED     7971     /run/dbus/system_bus_socket
unix  3      [ ]         STREAM     CONNECTED     7967     /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED     9008
unix  3      [ ]         STREAM     CONNECTED     8764     @/tmp/.X11-unix/X0
unix  3      [ ]         STREAM     CONNECTED     10491    /run/user/1000/at-spi/bus_0
unix  3      [ ]         STREAM     CONNECTED     7961
unix  3      [ ]         STREAM     CONNECTED     9863     /run/user/1000/at-spi/bus_0
unix  3      [ ]         DGRAM      CONNECTED     7038
unix  3      [ ]         STREAM     CONNECTED     8948
unix  3      [ ]         STREAM     CONNECTED     7359     /run/dbus/system_bus_socket
unix  3      [ ]         STREAM     CONNECTED     7979
unix  3      [ ]         STREAM     CONNECTED     9823
unix  3      [ ]         STREAM     CONNECTED     7343
unix  3      [ ]         STREAM     CONNECTED     31044    /run/dbus/system_bus_socket
unix  3      [ ]         STREAM     CONNECTED     7742
unix  3      [ ]         STREAM     CONNECTED     7984     /run/user/1000/bus
```

To return to your computer, move the mouse pointer outside or press Ctrl+Alt.

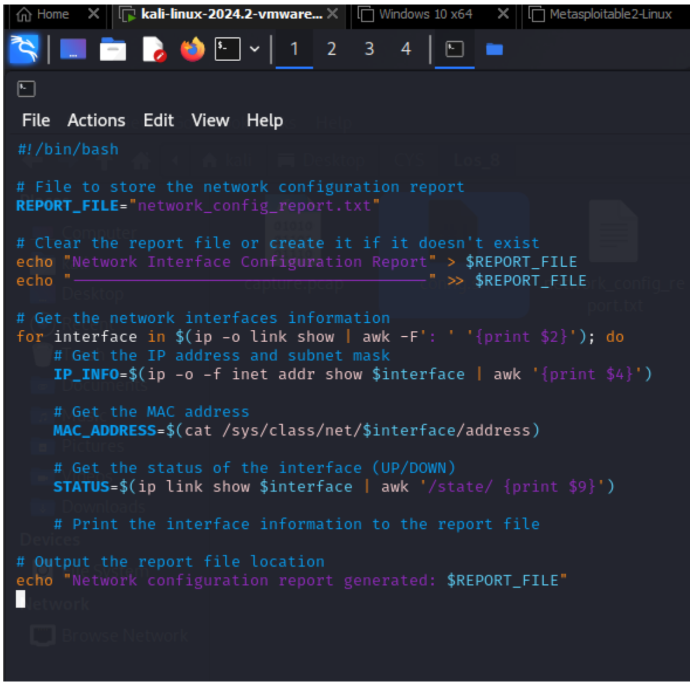
7. Use the ifconfig (Linux) or ip a command to display network interface configurations.



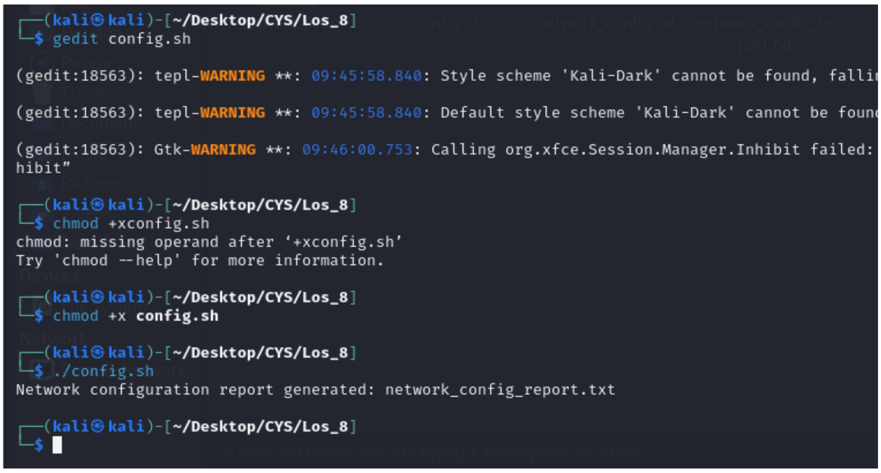
```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ ifconfig -a
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.80.129  netmask 255.255.255.0  broadcast 192.168.80.255
        inet6 fe80::148c:9f84:c60c:2043  prefixlen 64  scopeid 0×20<link>
        ether 00:0c:29:b8:05:77  txqueuelen 1000  (Ethernet)
        RX packets 563  bytes 38562 (37.6 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 328  bytes 26540 (25.9 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 0×10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 8  bytes 480 (480.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 8  bytes 480 (480.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0


┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ 
```

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

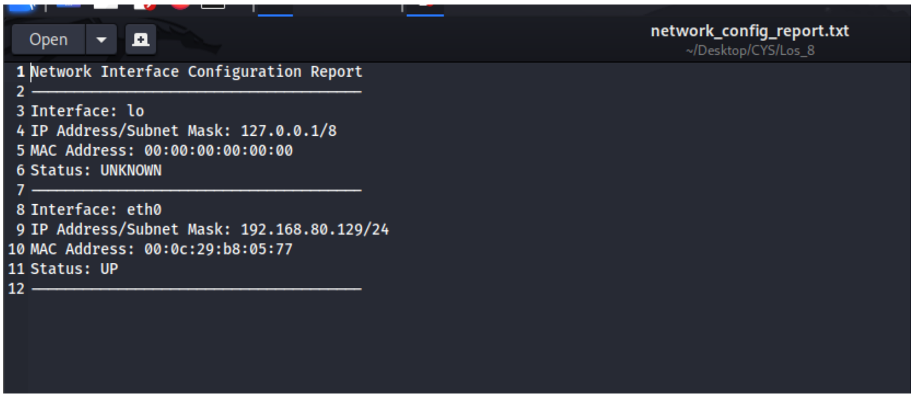
8. Write a script to report document the configuration of each interface, noting the IP address, subnet mask, and any other relevant information.



```
#!/bin/bash

# File to store the network configuration report
REPORT_FILE="network_config_report.txt"

# Clear the report file or create it if it doesn't exist
echo "Network Interface Configuration Report" > $REPORT_FILE
echo "————————————————————————————————————————" >> $REPORT_FILE

# Get the network interfaces information
for interface in $(ip -o link show | awk -F': ' '{print $2}'); do
    # Get the IP address and subnet mask
    IP_INFO=$(ip -o -f inet addr show $interface | awk '{print $4}')

    # Get the MAC address
    MAC_ADDRESS=$(cat /sys/class/net/$interface/address)

    # Get the status of the interface (UP/DOWN)
    STATUS=$(ip link show $interface | awk '/state/ {print $9}')

    # Print the interface information to the report file

# Output the report file location
echo "Network configuration report generated: $REPORT_FILE"
```

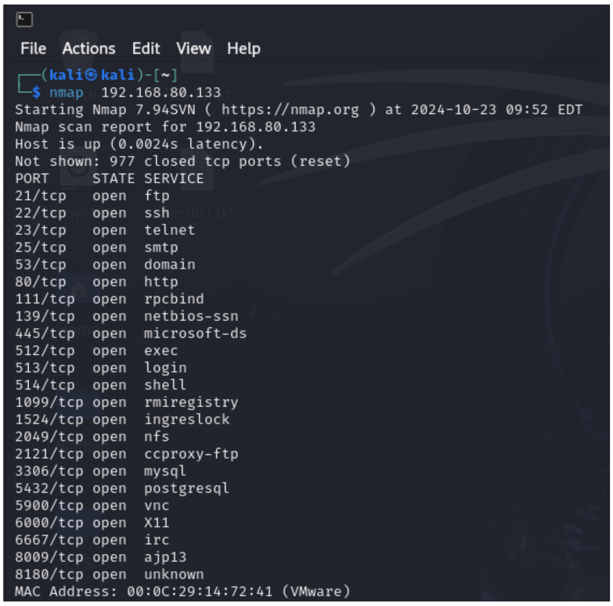


```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ gedit config.sh

(gedit:18563): tepl-WARNING **: 09:45:58.840: Style scheme 'Kali-Dark' cannot be found, falli

(gedit:18563): tepl-WARNING **: 09:45:58.840: Default style scheme 'Kali-Dark' cannot be founc

(gedit:18563): Gtk-WARNING **: 09:46:00.753: Calling org.xfce.Session.Manager.Inhibit failed:
hibit”

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ chmod +xconfig.sh
chmod: missing operand after '+xconfig.sh'
Try 'chmod --help' for more information.

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ chmod +x config.sh

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ ./config.sh
Network configuration report generated: network_config_report.txt

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ 
```



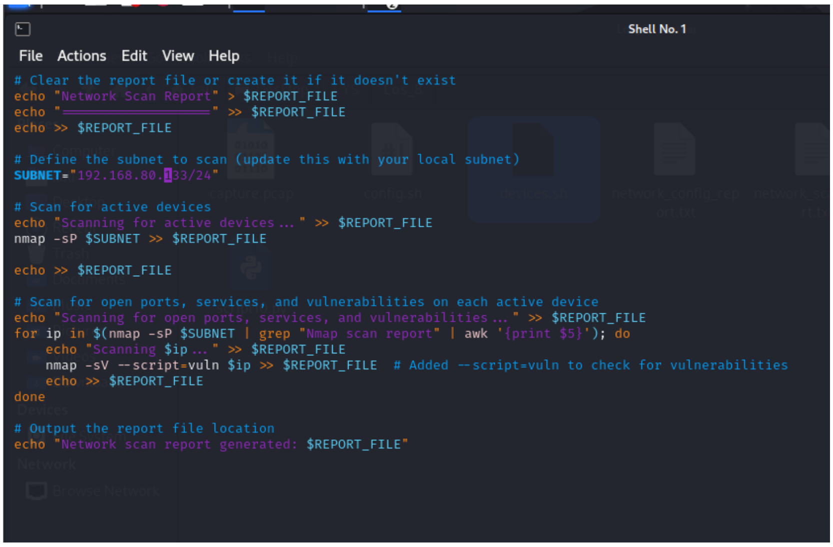
```
Network Interface Configuration Report
──────────────────────────────────────
Interface: lo
IP Address/Subnet Mask: 127.0.0.1/8
MAC Address: 00:00:00:00:00:00
Status: UNKNOWN
──────────────────────────────────────
Interface: eth0
IP Address/Subnet Mask: 192.168.80.129/24
MAC Address: 00:0c:29:b8:05:77
Status: UP
──────────────────────────────────────
```

9. Perform a basic network scan using nmap on your local network to identify active devices and open ports.

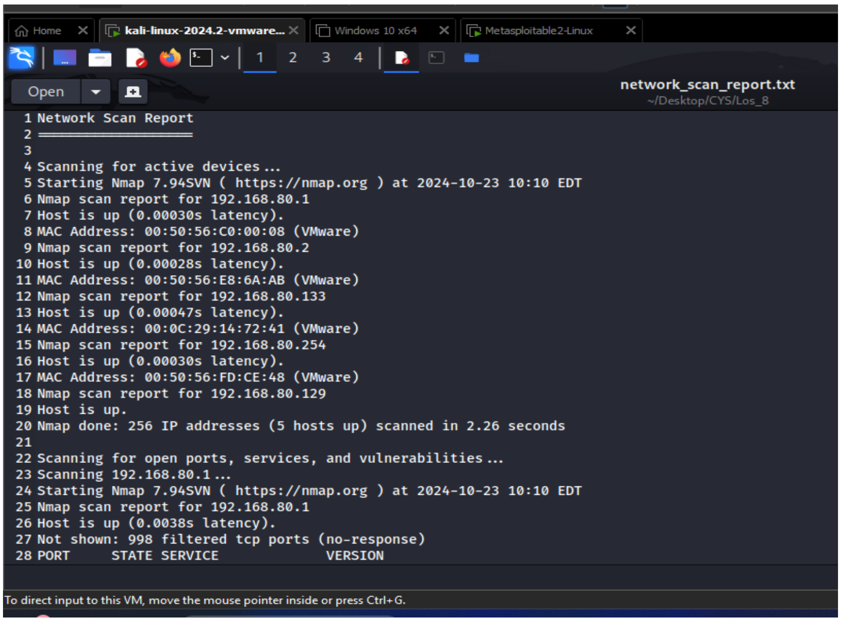


```
┌──(kali㉿kali)-[~]
└─$ nmap 192.168.80.133
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-10-23 09:52 EDT
Nmap scan report for 192.168.80.133
Host is up (0.0024s latency).
Not shown: 977 closed tcp ports (reset)
PORT     STATE SERVICE
21/tcp   open  ftp
22/tcp   open  ssh
23/tcp   open  telnet
25/tcp   open  smtp
53/tcp   open  domain
80/tcp   open  http
111/tcp  open  rpcbind
139/tcp  open  netbios-ssn
445/tcp  open  microsoft-ds
512/tcp  open  exec
513/tcp  open  login
514/tcp  open  shell
1099/tcp open  rmiregistry
1524/tcp open  ingreslock
2049/tcp open  nfs
2121/tcp open  ccproxy-ftp
3306/tcp open  mysql
5432/tcp open  postgresql
5900/tcp open  vnc
6000/tcp open  X11
6667/tcp open  irc
8009/tcp open  ajp13
8180/tcp open  unknown
MAC Address: 00:0C:29:14:72:41 (VMware)
```

10. Create a report summarizing the devices found, their IP addresses, and the services running on the open ports.



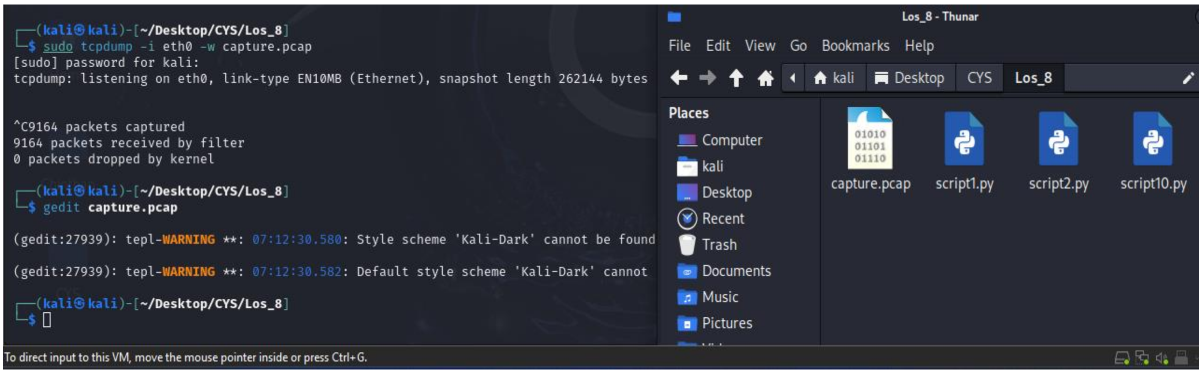
```
# Clear the report file or create it if it doesn't exist
echo "Network Scan Report" > $REPORT_FILE
echo "══════════════════════" >> $REPORT_FILE
echo >> $REPORT_FILE

# Define the subnet to scan (update this with your local subnet)
SUBNET="192.168.80.133/24"

# Scan for active devices
echo "Scanning for active devices ..." >> $REPORT_FILE
nmap -sP $SUBNET >> $REPORT_FILE

echo >> $REPORT_FILE

# Scan for open ports, services, and vulnerabilities on each active device
echo "Scanning for open ports, services, and vulnerabilities ..." >> $REPORT_FILE
for ip in $(nmap -sP $SUBNET | grep "Nmap scan report" | awk '{print $5}'); do
    echo "Scanning $ip ..." >> $REPORT_FILE
    nmap -sV --script=vuln $ip >> $REPORT_FILE  # Added --script=vuln to check for vulnerabilities
    echo >> $REPORT_FILE
done

# Output the report file location
echo "Network scan report generated: $REPORT_FILE"
```



```
Network Scan Report
===================

Scanning for active devices...
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-10-23 10:10 EDT
Nmap scan report for 192.168.80.1
Host is up (0.00030s latency).
MAC Address: 00:50:56:C0:00:08 (VMware)
Nmap scan report for 192.168.80.2
Host is up (0.00028s latency).
MAC Address: 00:50:56:E8:6A:AB (VMware)
Nmap scan report for 192.168.80.133
Host is up (0.00047s latency).
MAC Address: 00:0C:29:14:72:41 (VMware)
Nmap scan report for 192.168.80.254
Host is up (0.00030s latency).
MAC Address: 00:50:56:FD:CE:48 (VMware)
Nmap scan report for 192.168.80.129
Host is up.
Nmap done: 256 IP addresses (5 hosts up) scanned in 2.26 seconds

Scanning for open ports, services, and vulnerabilities...
Scanning 192.168.80.1...
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-10-23 10:10 EDT
Nmap scan report for 192.168.80.1
Host is up (0.0038s latency).
Not shown: 998 filtered tcp ports (no-response)
PORT      STATE SERVICE              VERSION
```

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

11. Capture network packets using tcpdump on a specific interface.

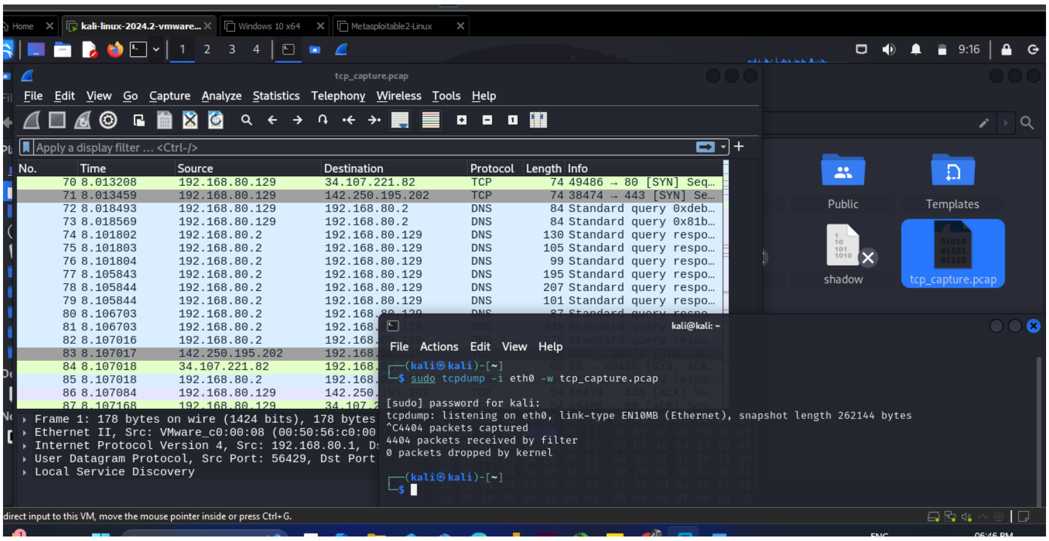


```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ sudo tcpdump -i eth0 -w capture.pcap
[sudo] password for kali:
tcpdump: listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes


^C9164 packets captured
9164 packets received by filter
0 packets dropped by kernel

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ gedit capture.pcap

(gedit:27939): tepl-WARNING **: 07:12:30.580: Style scheme 'Kali-Dark' cannot be found

(gedit:27939): tepl-WARNING **: 07:12:30.582: Default style scheme 'Kali-Dark' cannot

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ 
```

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

12. Analyze the captured packets for specific protocols (like HTTP or DNS) and summarize your findings.

HTTP

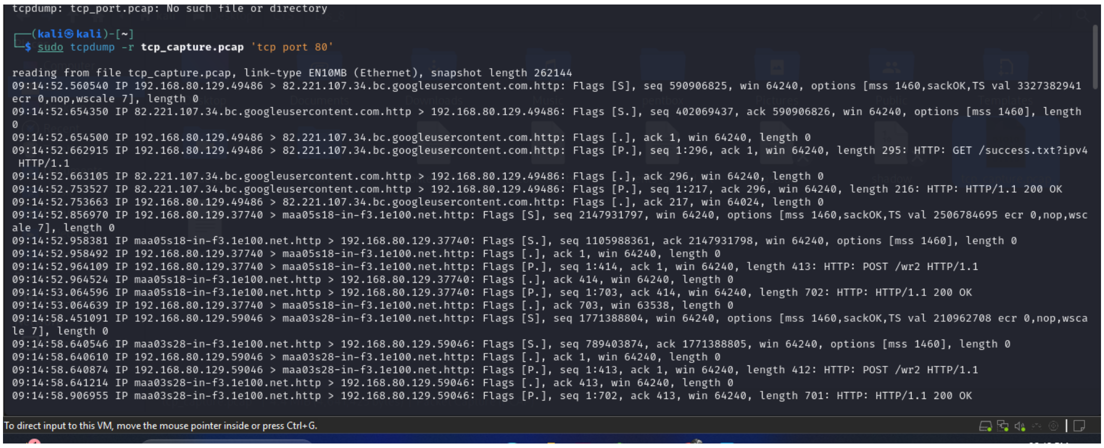


Home
kali-linux-2024.2-vmware...
Windows 10 x64
Metasploitable2-Linux
9:16
tcp_capture.pcap
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
Public
Templates
shadow
tcp_capture.pcap
kali@kali: ~
File Actions Edit View Help

```
No.   Time       Source            Destination       Protocol Length Info
   70 8.013208   192.168.80.129    34.107.221.82     TCP        74 49486 → 80 [SYN] Seq…
   71 8.013459   192.168.80.129    142.250.195.202   TCP        74 38474 → 443 [SYN] Se…
   72 8.018493   192.168.80.129    192.168.80.2      DNS        84 Standard query 0xdeb…
   73 8.018569   192.168.80.129    192.168.80.2      DNS        84 Standard query 0x81b…
   74 8.101802   192.168.80.2      192.168.80.129    DNS       130 Standard query respo…
   75 8.101803   192.168.80.2      192.168.80.129    DNS       105 Standard query respo…
   76 8.101804   192.168.80.2      192.168.80.129    DNS        99 Standard query respo…
   77 8.105843   192.168.80.2      192.168.80.129    DNS       195 Standard query respo…
   78 8.105844   192.168.80.2      192.168.80.129    DNS       207 Standard query respo…
   79 8.105844   192.168.80.2      192.168.80.129    DNS       101 Standard query respo…
   80 8.106703   192.168.80.2      192.168.80.129    DNS        87 Standard query respo…
   81 8.106703   192.168.80.2      192.168.
   82 8.107016   192.168.80.2      192.168.
   83 8.107017   142.250.195.202   192.168.
   84 8.107018   34.107.221.82     192.168.
   85 8.107018   192.168.80.2      192.168.
   86 8.107084   192.168.80.129    142.250.
   87 8.107168   192.168.80.129    34.107.2

▸ Frame 1: 178 bytes on wire (1424 bits), 178 bytes
▸ Ethernet II, Src: VMware_c0:00:08 (00:50:56:c0:00
▸ Internet Protocol Version 4, Src: 192.168.80.1, Ds
▸ User Datagram Protocol, Src Port: 56429, Dst Port
▸ Local Service Discovery
```

```
┌──(kali㉿kali)-[~]
└─$ sudo tcpdump -i eth0 -w tcp_capture.pcap
[sudo] password for kali:
tcpdump: listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
^C4404 packets captured
4404 packets received by filter
0 packets dropped by kernel

┌──(kali㉿kali)-[~]
└─$ 
```

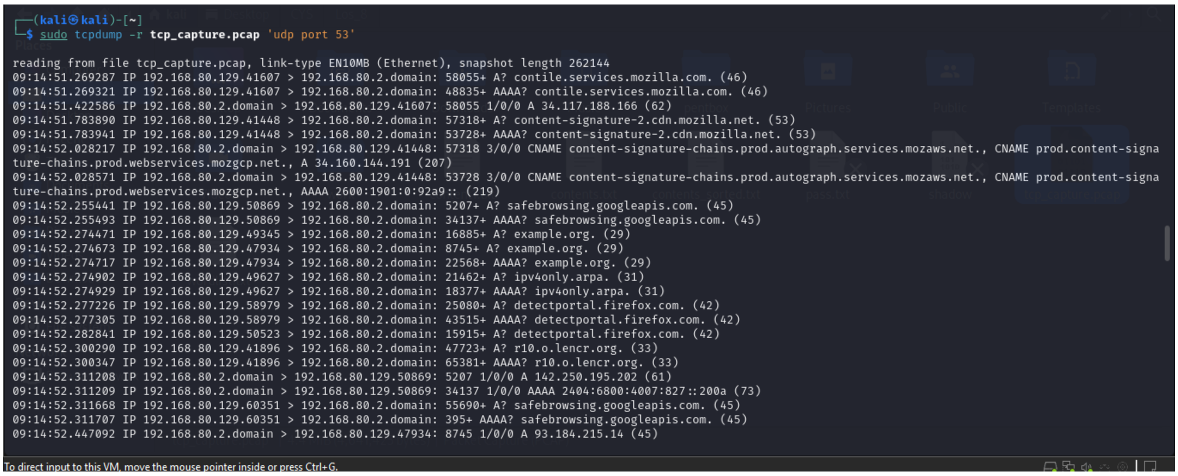
direct input to this VM, move the mouse pointer inside or press Ctrl+G.



```
tcpdump: tcp_port.pcap: No such file or directory

┌──(kali㉿kali)-[~]
└─$ sudo tcpdump -r tcp_capture.pcap 'tcp port 80'

reading from file tcp_capture.pcap, link-type EN10MB (Ethernet), snapshot length 262144
09:14:52.560540 IP 192.168.80.129.49486 > 82.221.107.34.bc.googleusercontent.com.http: Flags [S], seq 590906825, win 64240, options [mss 1460,sackOK,TS val 3327382941 ecr 0,nop,wscale 7], length 0
09:14:52.654350 IP 82.221.107.34.bc.googleusercontent.com.http > 192.168.80.129.49486: Flags [S.], seq 402069437, ack 590906826, win 64240, options [mss 1460], length 0
09:14:52.654500 IP 192.168.80.129.49486 > 82.221.107.34.bc.googleusercontent.com.http: Flags [.], ack 1, win 64240, length 0
09:14:52.662915 IP 192.168.80.129.49486 > 82.221.107.34.bc.googleusercontent.com.http: Flags [P.], seq 1:296, ack 1, win 64240, length 295: HTTP: GET /success.txt?ipv4 HTTP/1.1
09:14:52.663105 IP 82.221.107.34.bc.googleusercontent.com.http > 192.168.80.129.49486: Flags [.], ack 296, win 64240, length 0
09:14:52.753527 IP 82.221.107.34.bc.googleusercontent.com.http > 192.168.80.129.49486: Flags [P.], seq 1:217, ack 296, win 64240, length 216: HTTP: HTTP/1.1 200 OK
09:14:52.753663 IP 192.168.80.129.49486 > 82.221.107.34.bc.googleusercontent.com.http: Flags [.], ack 217, win 64024, length 0
09:14:52.856970 IP 192.168.80.129.37740 > maa05s18-in-f3.1e100.net.http: Flags [S], seq 2147931797, win 64240, options [mss 1460,sackOK,TS val 2506784695 ecr 0,nop,wscale 7], length 0
09:14:52.958381 IP maa05s18-in-f3.1e100.net.http > 192.168.80.129.37740: Flags [S.], seq 1105988361, ack 2147931798, win 64240, options [mss 1460], length 0
09:14:52.958492 IP 192.168.80.129.37740 > maa05s18-in-f3.1e100.net.http: Flags [.], ack 1, win 64240, length 0
09:14:52.964109 IP 192.168.80.129.37740 > maa05s18-in-f3.1e100.net.http: Flags [P.], seq 1:414, ack 1, win 64240, length 413: HTTP: POST /wr2 HTTP/1.1
09:14:52.964524 IP maa05s18-in-f3.1e100.net.http > 192.168.80.129.37740: Flags [.], ack 414, win 64240, length 0
09:14:53.064596 IP maa05s18-in-f3.1e100.net.http > 192.168.80.129.37740: Flags [P.], seq 1:703, ack 414, win 64240, length 702: HTTP: HTTP/1.1 200 OK
09:14:53.064639 IP 192.168.80.129.37740 > maa05s18-in-f3.1e100.net.http: Flags [.], ack 703, win 63538, length 0
09:14:58.451091 IP 192.168.80.129.59046 > maa03s28-in-f3.1e100.net.http: Flags [S], seq 1771388804, win 64240, options [mss 1460,sackOK,TS val 210962708 ecr 0,nop,wscale 7], length 0
09:14:58.640546 IP maa03s28-in-f3.1e100.net.http > 192.168.80.129.59046: Flags [S.], seq 789403874, ack 1771388805, win 64240, options [mss 1460], length 0
09:14:58.640610 IP 192.168.80.129.59046 > maa03s28-in-f3.1e100.net.http: Flags [.], ack 1, win 64240, length 0
09:14:58.640874 IP 192.168.80.129.59046 > maa03s28-in-f3.1e100.net.http: Flags [P.], seq 1:413, ack 1, win 64240, length 412: HTTP: POST /wr2 HTTP/1.1
09:14:58.641214 IP maa03s28-in-f3.1e100.net.http > 192.168.80.129.59046: Flags [.], ack 413, win 64240, length 0
09:14:58.906955 IP maa03s28-in-f3.1e100.net.http > 192.168.80.129.59046: Flags [P.], seq 1:702, ack 413, win 64240, length 701: HTTP: HTTP/1.1 200 OK
```

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

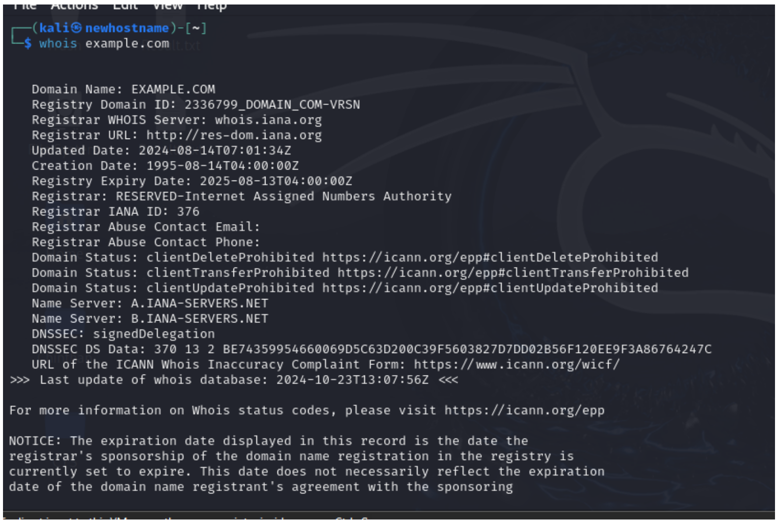
DNS



```
┌──(kali㉿kali)-[~]
└─$ sudo tcpdump -r tcp_capture.pcap 'udp port 53'

reading from file tcp_capture.pcap, link-type EN10MB (Ethernet), snapshot length 262144
09:14:51.269287 IP 192.168.80.129.41607 > 192.168.80.2.domain: 58055+ A? contile.services.mozilla.com. (46)
09:14:51.269321 IP 192.168.80.129.41607 > 192.168.80.2.domain: 48835+ AAAA? contile.services.mozilla.com. (46)
09:14:51.422586 IP 192.168.80.2.domain > 192.168.80.129.41607: 58055 1/0/0 A 34.117.188.166 (62)
09:14:51.783890 IP 192.168.80.129.41448 > 192.168.80.2.domain: 57318+ A? content-signature-2.cdn.mozilla.net. (53)
09:14:51.783941 IP 192.168.80.129.41448 > 192.168.80.2.domain: 53728+ AAAA? content-signature-2.cdn.mozilla.net. (53)
09:14:52.028217 IP 192.168.80.2.domain > 192.168.80.129.41448: 57318 3/0/0 CNAME content-signature-chains.prod.autograph.services.mozaws.net., CNAME prod.content-signature-chains.prod.webservices.mozgcp.net., A 34.160.144.191 (207)
09:14:52.028571 IP 192.168.80.2.domain > 192.168.80.129.41448: 53728 3/0/0 CNAME content-signature-chains.prod.autograph.services.mozaws.net., CNAME prod.content-signature-chains.prod.webservices.mozgcp.net., AAAA 2600:1901:0:92a9:: (219)
09:14:52.255441 IP 192.168.80.129.50869 > 192.168.80.2.domain: 5207+ A? safebrowsing.googleapis.com. (45)
09:14:52.255493 IP 192.168.80.129.50869 > 192.168.80.2.domain: 34137+ AAAA? safebrowsing.googleapis.com. (45)
09:14:52.274471 IP 192.168.80.129.49345 > 192.168.80.2.domain: 16885+ A? example.org. (29)
09:14:52.274673 IP 192.168.80.129.47934 > 192.168.80.2.domain: 8745+ A? example.org. (29)
09:14:52.274717 IP 192.168.80.129.47934 > 192.168.80.2.domain: 22568+ AAAA? example.org. (29)
09:14:52.274902 IP 192.168.80.129.49627 > 192.168.80.2.domain: 21462+ A? ipv4only.arpa. (31)
09:14:52.274929 IP 192.168.80.129.49627 > 192.168.80.2.domain: 18377+ AAAA? ipv4only.arpa. (31)
09:14:52.277226 IP 192.168.80.129.58979 > 192.168.80.2.domain: 25080+ A? detectportal.firefox.com. (42)
09:14:52.277305 IP 192.168.80.129.58979 > 192.168.80.2.domain: 43515+ AAAA? detectportal.firefox.com. (42)
09:14:52.282841 IP 192.168.80.129.50523 > 192.168.80.2.domain: 15915+ A? detectportal.firefox.com. (42)
09:14:52.300290 IP 192.168.80.129.41896 > 192.168.80.2.domain: 47723+ A? r10.o.lencr.org. (33)
09:14:52.300347 IP 192.168.80.129.41896 > 192.168.80.2.domain: 65381+ AAAA? r10.o.lencr.org. (33)
09:14:52.311208 IP 192.168.80.2.domain > 192.168.80.129.50869: 5207 1/0/0 A 142.250.195.202 (61)
09:14:52.311209 IP 192.168.80.2.domain > 192.168.80.129.50869: 34137 1/0/0 AAAA 2404:6800:4007:827::200a (73)
09:14:52.311668 IP 192.168.80.129.60351 > 192.168.80.2.domain: 55690+ A? safebrowsing.googleapis.com. (45)
09:14:52.311707 IP 192.168.80.129.60351 > 192.168.80.2.domain: 395+ AAAA? safebrowsing.googleapis.com. (45)
09:14:52.447092 IP 192.168.80.2.domain > 192.168.80.129.47934: 8745 1/0/0 A 93.184.215.14 (45)
```

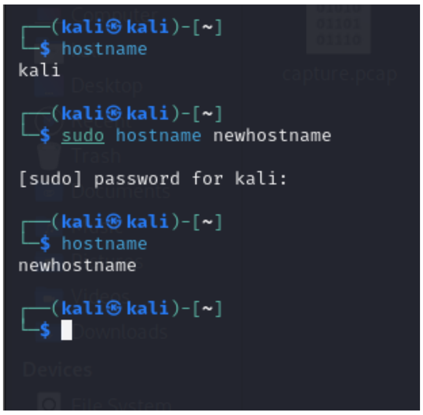
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

13. Use the whois command to gather registration information about a domain.



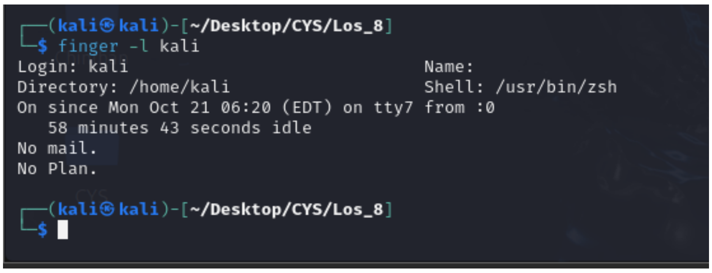
```
┌──(kali㉿newhostname)-[~]
└─$ whois example.com

   Domain Name: EXAMPLE.COM
   Registry Domain ID: 2336799_DOMAIN_COM-VRSN
   Registrar WHOIS Server: whois.iana.org
   Registrar URL: http://res-dom.iana.org
   Updated Date: 2024-08-14T07:01:34Z
   Creation Date: 1995-08-14T04:00:00Z
   Registry Expiry Date: 2025-08-13T04:00:00Z
   Registrar: RESERVED-Internet Assigned Numbers Authority
   Registrar IANA ID: 376
   Registrar Abuse Contact Email:
   Registrar Abuse Contact Phone:
   Domain Status: clientDeleteProhibited https://icann.org/epp#clientDeleteProhibited
   Domain Status: clientTransferProhibited https://icann.org/epp#clientTransferProhibited
   Domain Status: clientUpdateProhibited https://icann.org/epp#clientUpdateProhibited
   Name Server: A.IANA-SERVERS.NET
   Name Server: B.IANA-SERVERS.NET
   DNSSEC: signedDelegation
   DNSSEC DS Data: 370 13 2 BE74359954660069D5C63D200C39F5603827D7DD02B56F120EE9F3A86764247C
   URL of the ICANN Whois Inaccuracy Complaint Form: https://www.icann.org/wicf/
>>> Last update of whois database: 2024-10-23T13:07:56Z <<<

For more information on Whois status codes, please visit https://icann.org/epp

NOTICE: The expiration date displayed in this record is the date the
registrar's sponsorship of the domain name registration in the registry is
currently set to expire. This date does not necessarily reflect the expiration
date of the domain name registrant's agreement with the sponsoring
```

14. Use the hostname command to display and change the hostname of your machine.



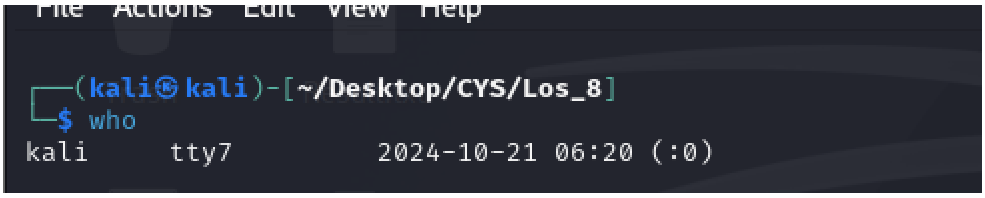
```
┌──(kali㉿kali)-[~]
└─$ hostname
kali

┌──(kali㉿kali)-[~]
└─$ sudo hostname newhostname

[sudo] password for kali:

┌──(kali㉿kali)-[~]
└─$ hostname
newhostname

┌──(kali㉿kali)-[~]
└─$ 
```

15. Use the finger command to gather information about users on a system.



```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ finger -l kali
Login: kali                             Name:
Directory: /home/kali                   Shell: /usr/bin/zsh
On since Mon Oct 21 06:20 (EDT) on tty7 from :0
   58 minutes 43 seconds idle
No mail.
No Plan.

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ 
```

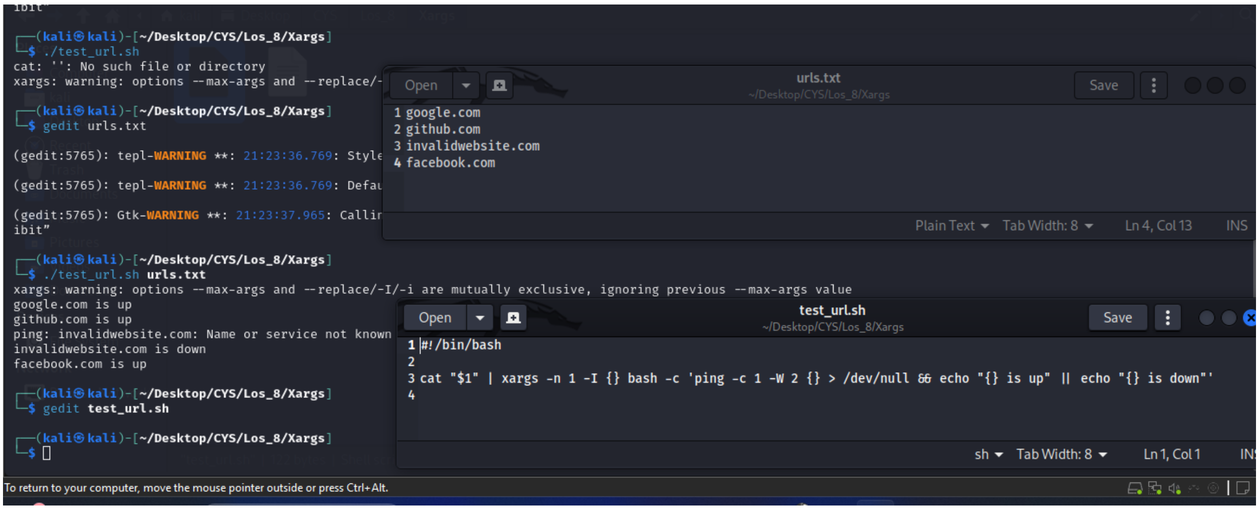
16. Use the who command to see who is currently logged into the system and the last command to view the login history.



```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8]
└─$ who
kali       tty7          2024-10-21 06:20 (:0)
```

XARGS:

1. Write a shell script called testurl.sh that accepts a list of urls in a separate file and tests if the website is up or not.



```
ibit"

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ ./test_url.sh
cat: '': No such file or directory
xargs: warning: options --max-args and --replace/-

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit urls.txt

(gedit:5765): tepl-WARNING **: 21:23:36.769: Style

(gedit:5765): tepl-WARNING **: 21:23:36.769: Defau

(gedit:5765): Gtk-WARNING **: 21:23:37.965: Callir
ibit"

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ ./test_url.sh urls.txt
xargs: warning: options --max-args and --replace/-I/-i are mutually exclusive, ignoring previous --max-args value
google.com is up
github.com is up
ping: invalidwebsite.com: Name or service not known
invalidwebsite.com is down
facebook.com is up

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit test_url.sh

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ 
```

urls.txt
~/Desktop/CYS/Los_8/Xargs

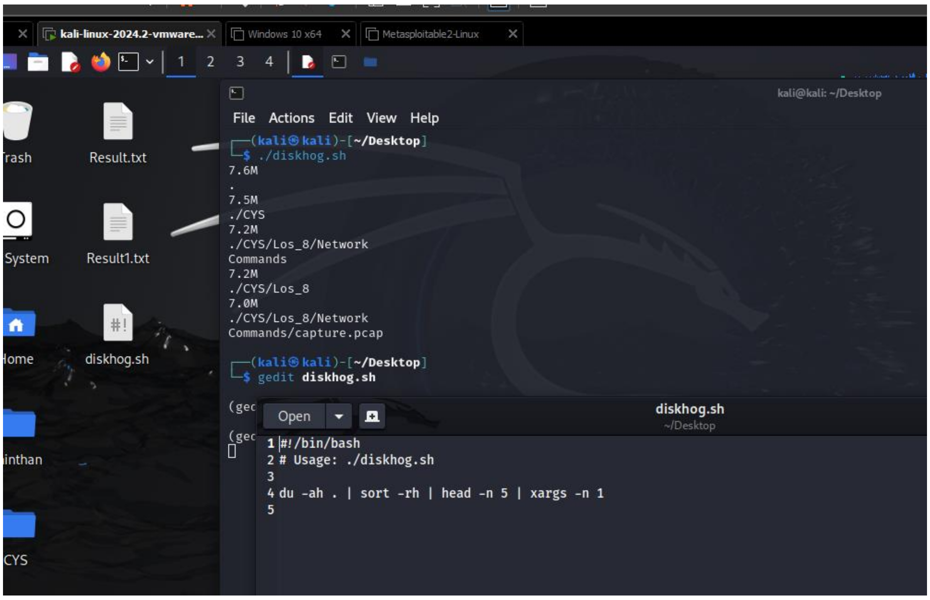
```
google.com
github.com
invalidwebsite.com
facebook.com
```

test_url.sh
~/Desktop/CYS/Los_8/Xargs

```
#!/bin/bash

cat "$1" | xargs -n 1 -I {} bash -c 'ping -c 1 -W 2 {} > /dev/null && echo "{} is up" || echo "{} is down"'

```

To return to your computer, move the mouse pointer outside or press Ctrl+Alt.

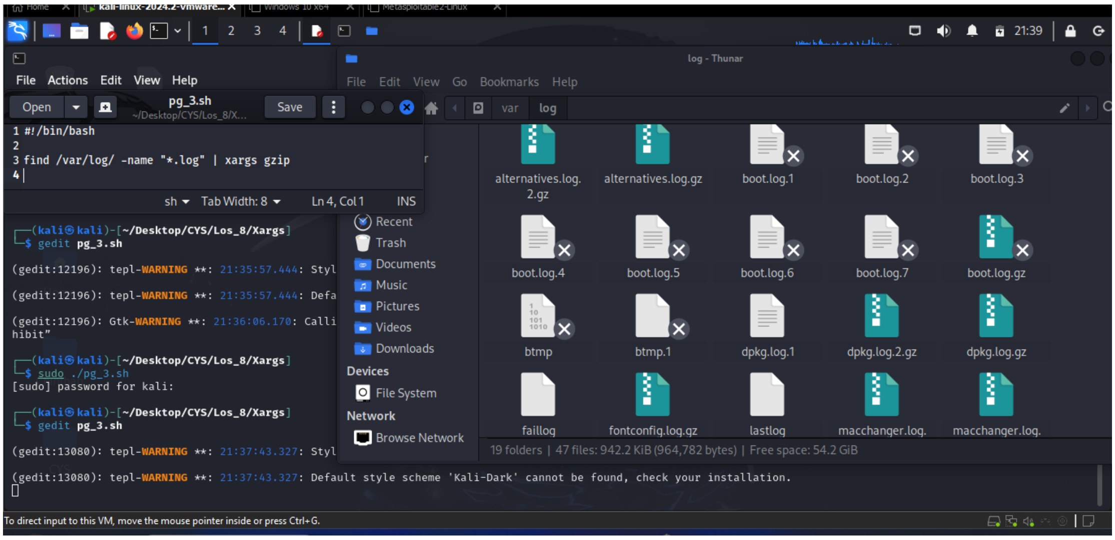
2. Create a shell script called diskhog.sh that lists the 5 largest items (files or directories) in the current directory in decreasing order of size.



```
┌──(kali㉿kali)-[~/Desktop]
└─$ ./diskhog.sh
7.6M
.
7.5M
./CYS
7.2M
./CYS/Los_8/Network
Commands
7.2M
./CYS/Los_8
7.0M
./CYS/Los_8/Network
Commands/capture.pcap

┌──(kali㉿kali)-[~/Desktop]
└─$ gedit diskhog.sh
```

```
#!/bin/bash
# Usage: ./diskhog.sh

du -ah . | sort -rh | head -n 5 | xargs -n 1

```

3. Compress all .log files found in the /var/logs/ directory?



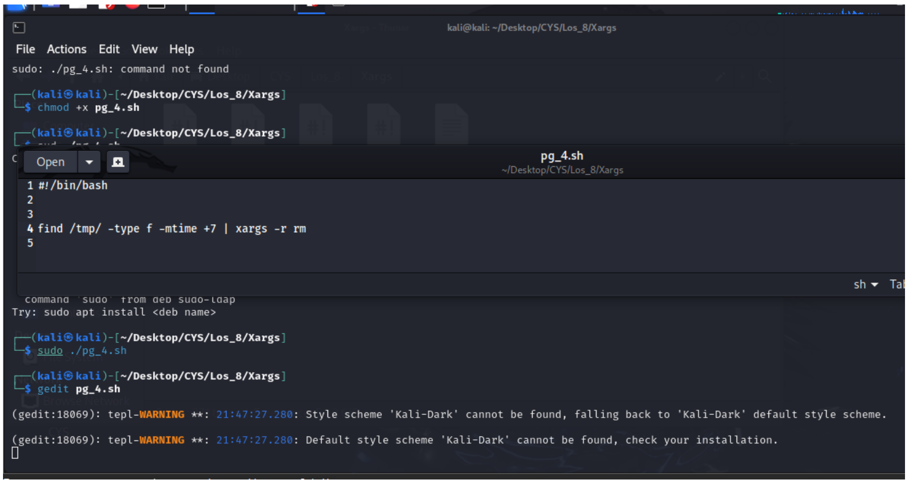
```
#!/bin/bash

find /var/log/ -name "*.log" | xargs gzip

```

19 folders | 47 files: 942.2 KiB (964,782 bytes) | Free space: 54.2 GiB

```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit pg_3.sh

(gedit:12196): tepl-WARNING **: 21:35:57.444: Styl

(gedit:12196): tepl-WARNING **: 21:35:57.444: Defa

(gedit:12196): Gtk-WARNING **: 21:36:06.170: Calli
hibit"

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ sudo ./pg_3.sh
[sudo] password for kali:

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit pg_3.sh

(gedit:13080): tepl-WARNING **: 21:37:43.327: Styl

(gedit:13080): tepl-WARNING **: 21:37:43.327: Default style scheme 'Kali-Dark' cannot be found, check your installation.
```

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

4. Delete all temporary files older than 7 days from the /tmp/ directory?

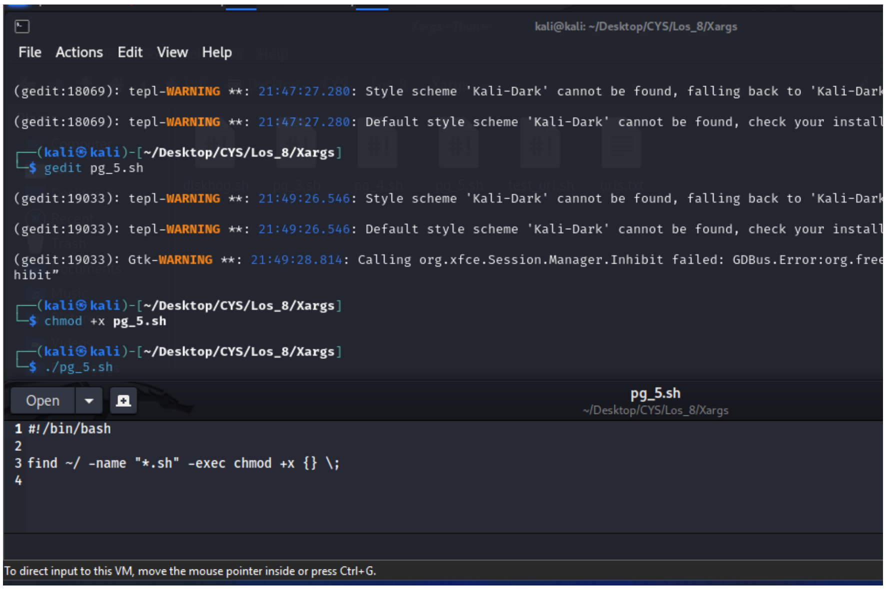

kali@kali: ~/Desktop/CYS/Los_8/Xargs
File Actions Edit View Help
Open
pg_4.sh
~/Desktop/CYS/Los_8/Xargs
sh
Ta

```
sudo: ./pg_4.sh: command not found

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ chmod +x pg_4.sh

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
```

```
#!/bin/bash


find /tmp/ -type f -mtime +7 | xargs -r rm

```

```
  command 'sudo' from deb sudo-ldap
Try: sudo apt install <deb name>

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ sudo ./pg_4.sh

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit pg_4.sh

(gedit:18069): tepl-WARNING **: 21:47:27.280: Style scheme 'Kali-Dark' cannot be found, falling back to 'Kali-Dark' default style scheme.

(gedit:18069): tepl-WARNING **: 21:47:27.280: Default style scheme 'Kali-Dark' cannot be found, check your installation.
```

5. write a shell script to make all .sh files in your home directory executable?

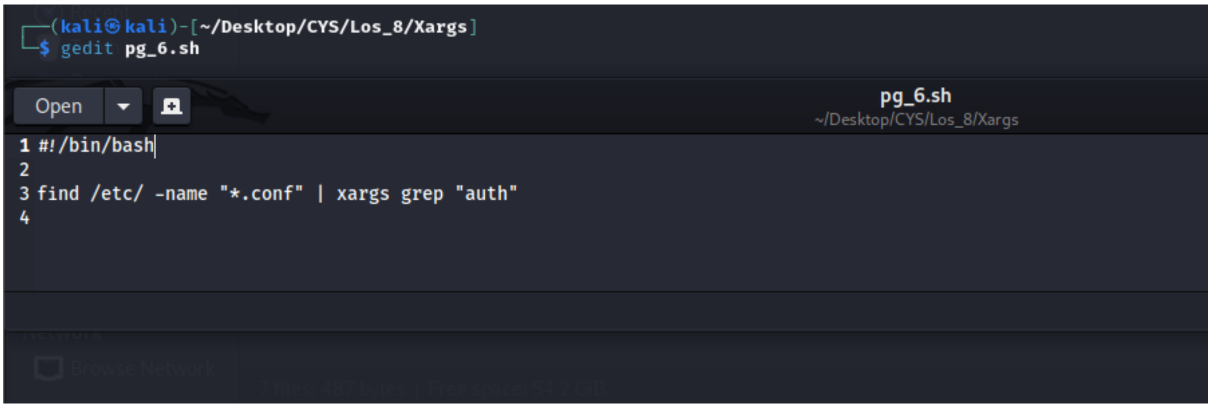

kali@kali: ~/Desktop/CYS/Los_8/Xargs
File Actions Edit View Help

```
(gedit:18069): tepl-WARNING **: 21:47:27.280: Style scheme 'Kali-Dark' cannot be found, falling back to 'Kali-Dark

(gedit:18069): tepl-WARNING **: 21:47:27.280: Default style scheme 'Kali-Dark' cannot be found, check your install

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit pg_5.sh

(gedit:19033): tepl-WARNING **: 21:49:26.546: Style scheme 'Kali-Dark' cannot be found, falling back to 'Kali-Dark

(gedit:19033): tepl-WARNING **: 21:49:26.546: Default style scheme 'Kali-Dark' cannot be found, check your install

(gedit:19033): Gtk-WARNING **: 21:49:28.814: Calling org.xfce.Session.Manager.Inhibit failed: GDBus.Error:org.free
hibit"

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ chmod +x pg_5.sh

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ ./pg_5.sh
```

```
#!/bin/bash

find ~/ -name "*.sh" -exec chmod +x {} \;

```

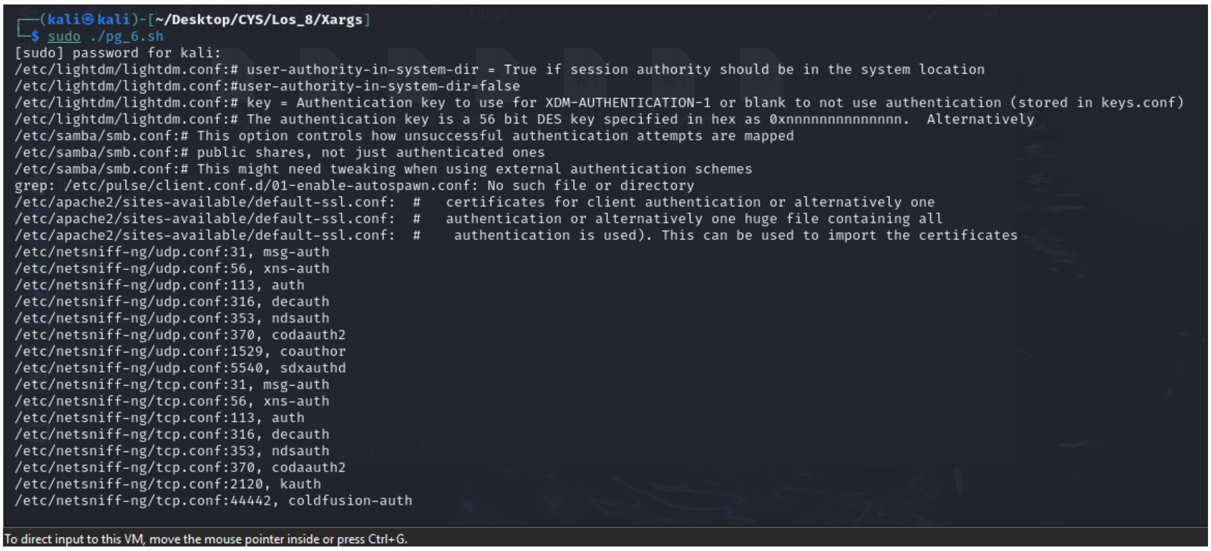
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

6. search for the string "auth" in all .conf files in the /etc/ directory.



```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit pg_6.sh
```

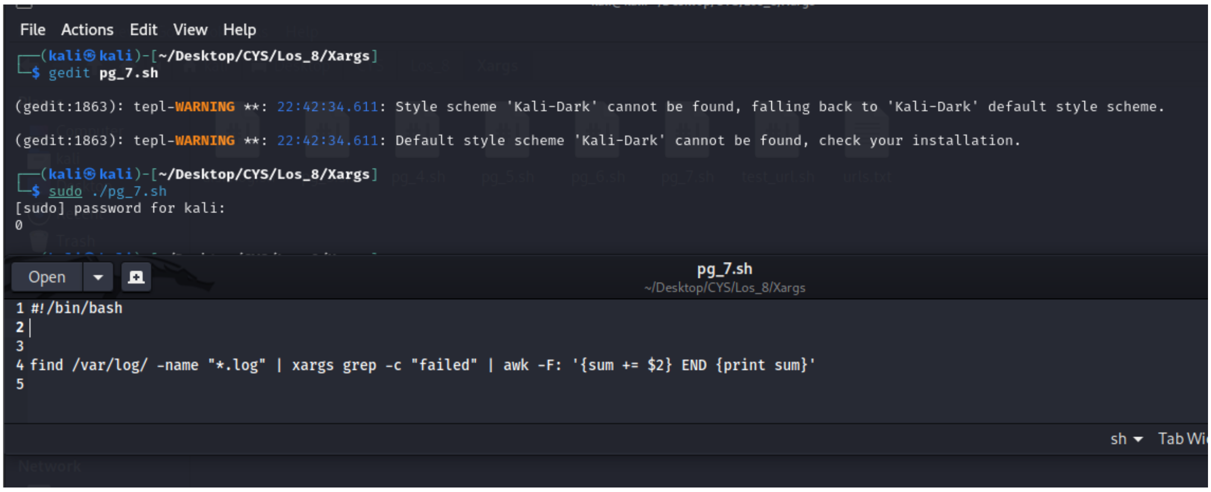
```
#!/bin/bash

find /etc/ -name "*.conf" | xargs grep "auth"

```



```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ sudo ./pg_6.sh
[sudo] password for kali:
/etc/lightdm/lightdm.conf:# user-authority-in-system-dir = True if session authority should be in the system location
/etc/lightdm/lightdm.conf:#user-authority-in-system-dir=false
/etc/lightdm/lightdm.conf:# key = Authentication key to use for XDM-AUTHENTICATION-1 or blank to not use authentication (stored in keys.conf)
/etc/lightdm/lightdm.conf:# The authentication key is a 56 bit DES key specified in hex as 0xnnnnnnnnnnnnnn.  Alternatively
/etc/samba/smb.conf:# This option controls how unsuccessful authentication attempts are mapped
/etc/samba/smb.conf:# public shares, not just authenticated ones
/etc/samba/smb.conf:# This might need tweaking when using external authentication schemes
grep: /etc/pulse/client.conf.d/01-enable-autospawn.conf: No such file or directory
/etc/apache2/sites-available/default-ssl.conf:  #   certificates for client authentication or alternatively one
/etc/apache2/sites-available/default-ssl.conf:  #   authentication or alternatively one huge file containing all
/etc/apache2/sites-available/default-ssl.conf:  #    authentication is used). This can be used to import the certificates
/etc/netsniff-ng/udp.conf:31, msg-auth
/etc/netsniff-ng/udp.conf:56, xns-auth
/etc/netsniff-ng/udp.conf:113, auth
/etc/netsniff-ng/udp.conf:316, decauth
/etc/netsniff-ng/udp.conf:353, ndsauth
/etc/netsniff-ng/udp.conf:370, codaauth2
/etc/netsniff-ng/udp.conf:1529, coauthor
/etc/netsniff-ng/udp.conf:5540, sdxauthd
/etc/netsniff-ng/tcp.conf:31, msg-auth
/etc/netsniff-ng/tcp.conf:56, xns-auth
/etc/netsniff-ng/tcp.conf:113, auth
/etc/netsniff-ng/tcp.conf:316, decauth
/etc/netsniff-ng/tcp.conf:353, ndsauth
/etc/netsniff-ng/tcp.conf:370, codaauth2
/etc/netsniff-ng/tcp.conf:2120, kauth
/etc/netsniff-ng/tcp.conf:44442, coldfusion-auth
```

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

7. count the number of "failed" login attempts in all .log files in /var/log/?

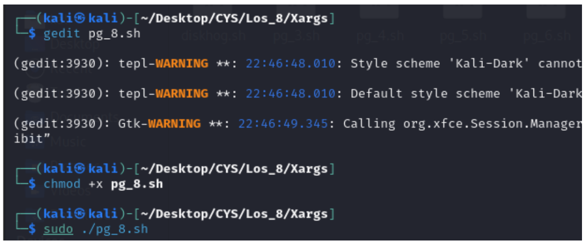


```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit pg_7.sh

(gedit:1863): tepl-WARNING **: 22:42:34.611: Style scheme 'Kali-Dark' cannot be found, falling back to 'Kali-Dark' default style scheme.

(gedit:1863): tepl-WARNING **: 22:42:34.611: Default style scheme 'Kali-Dark' cannot be found, check your installation.

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ sudo ./pg_7.sh
[sudo] password for kali:
0
```

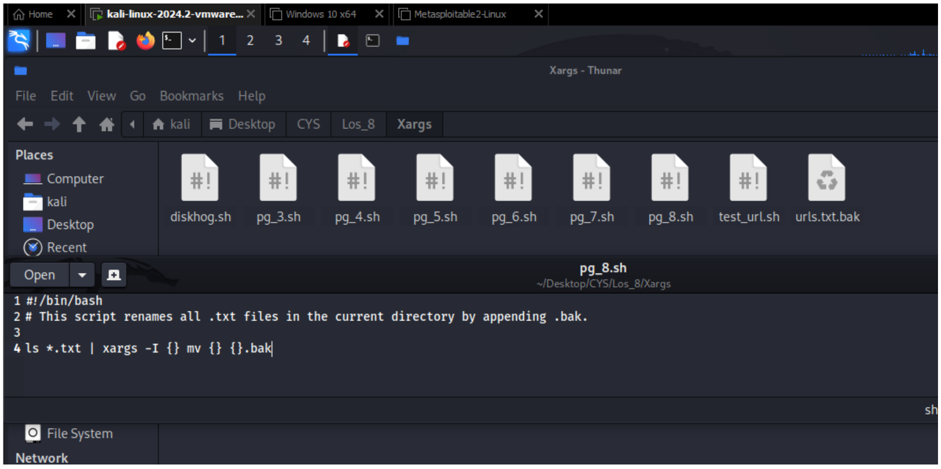
pg_7.sh
~/Desktop/CYS/Los_8/Xargs

```
#!/bin/bash


find /var/log/ -name "*.log" | xargs grep -c "failed" | awk -F: '{sum += $2} END {print sum}'

```

8. Rename all .txt files in the current directory by appending .bak



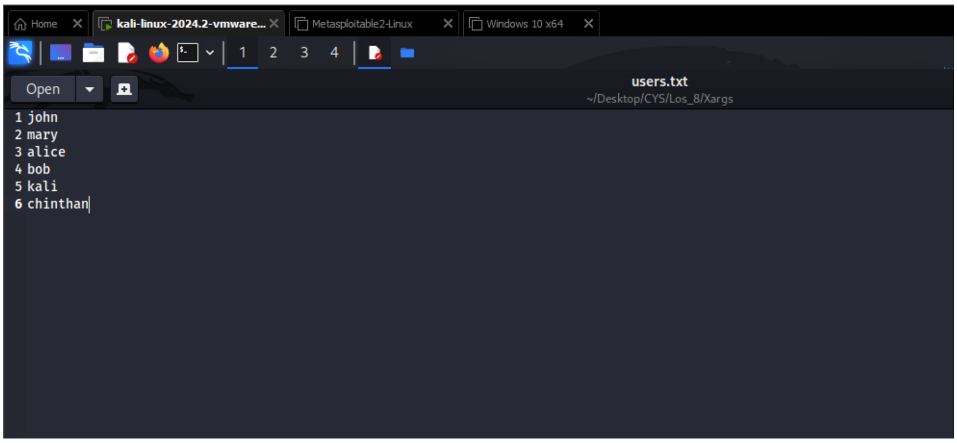
```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit pg_8.sh

(gedit:3930): tepl-WARNING **: 22:46:48.010: Style scheme 'Kali-Dark' cannot

(gedit:3930): tepl-WARNING **: 22:46:48.010: Default style scheme 'Kali-Dark

(gedit:3930): Gtk-WARNING **: 22:46:49.345: Calling org.xfce.Session.Manager
ibit”

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ chmod +x pg_8.sh

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ sudo ./pg_8.sh
```



pg_8.sh
~/Desktop/CYS/Los_8/Xargs

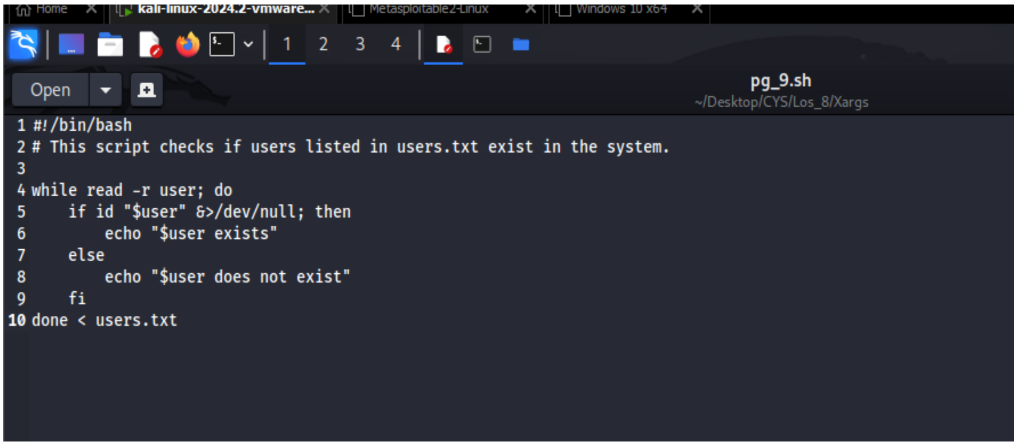
```
#!/bin/bash
# This script renames all .txt files in the current directory by appending .bak.

ls *.txt | xargs -I {} mv {} {}.bak
```

9. Write a shell script to check if a list of users from users.txt exist in the system.

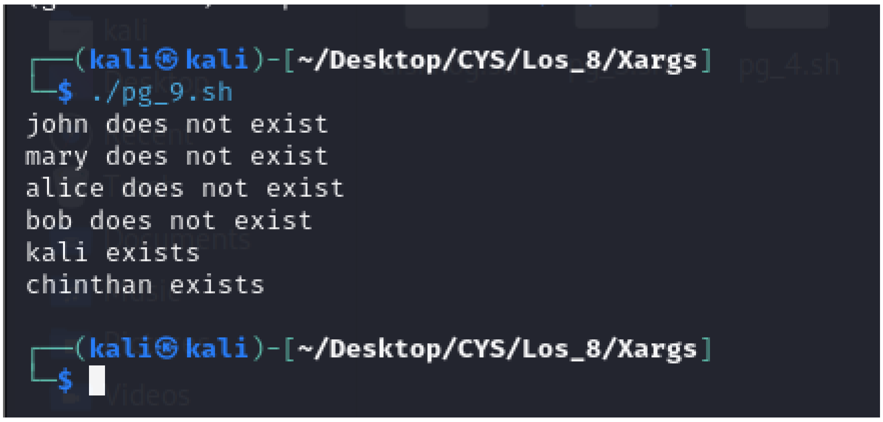


users.txt
~/Desktop/CYS/Los_8/Xargs

```
john
mary
alice
bob
kali
chinthan
```

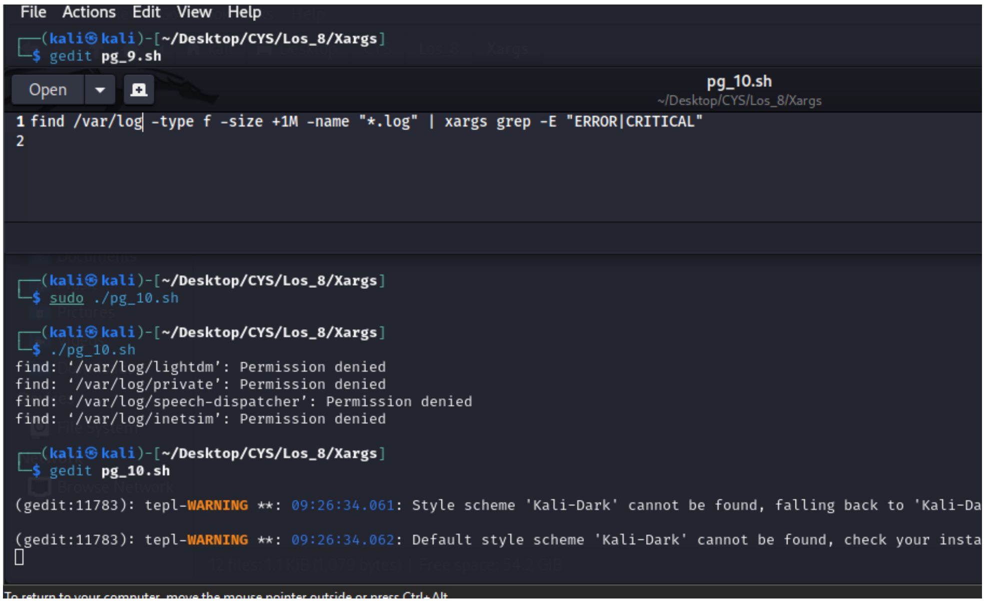


```
#!/bin/bash
# This script checks if users listed in users.txt exist in the system.

while read -r user; do
    if id "$user" &>/dev/null; then
        echo "$user exists"
    else
        echo "$user does not exist"
    fi
done < users.txt
```



```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ ./pg_9.sh
john does not exist
mary does not exist
alice does not exist
bob does not exist
kali exists
chinthan exists

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ 
```

10. search for keywords like "ERROR" or "CRITICAL" in all log files over 1MB in size.


File
Actions
Edit
View
Help
Open
pg_10.sh
~/Desktop/CYS/Los_8/Xargs
To return to your computer, move the mouse pointer outside or press Ctrl+Alt.

```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit pg_9.sh
```

```
find /var/log -type f -size +1M -name "*.log" | xargs grep -E "ERROR|CRITICAL"
```

```
┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ sudo ./pg_10.sh

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ ./pg_10.sh
find: '/var/log/lightdm': Permission denied
find: '/var/log/private': Permission denied
find: '/var/log/speech-dispatcher': Permission denied
find: '/var/log/inetsim': Permission denied

┌──(kali㉿kali)-[~/Desktop/CYS/Los_8/Xargs]
└─$ gedit pg_10.sh

(gedit:11783): tepl-WARNING **: 09:26:34.061: Style scheme 'Kali-Dark' cannot be found, falling back to 'Kali-Da

(gedit:11783): tepl-WARNING **: 09:26:34.062: Default style scheme 'Kali-Dark' cannot be found, check your insta
```