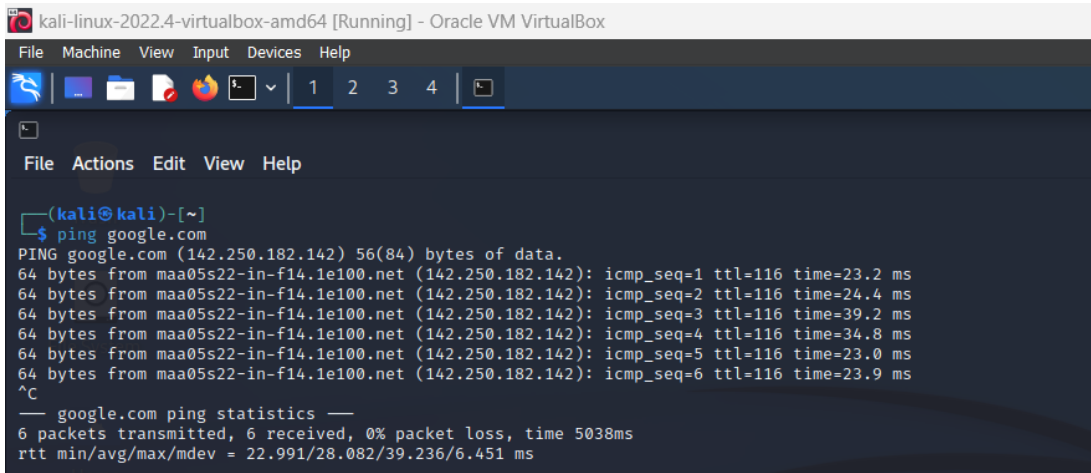


Networking Project

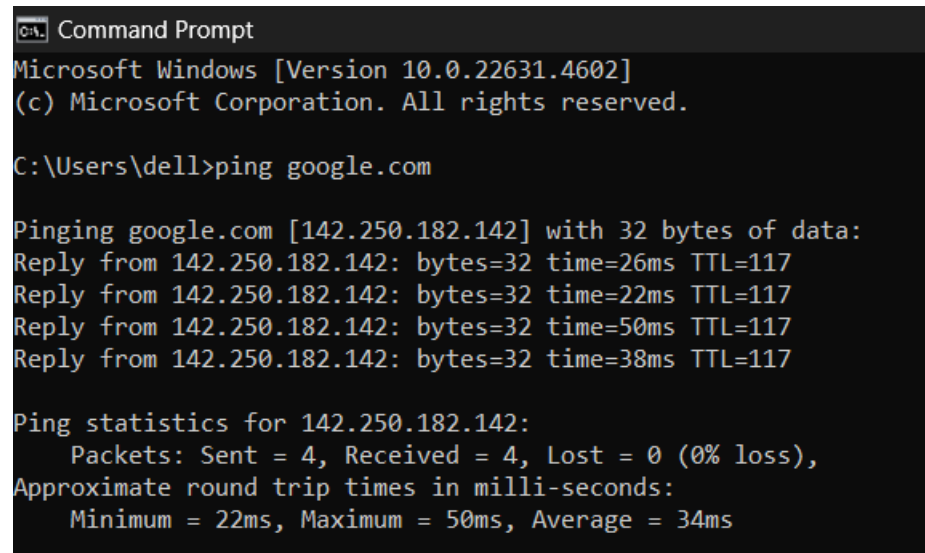
1. Perform Ping and traceroute to google.com

Ans:

In the kali linux virtual machine and windows machine the ping command is performed to google.com and relevant outputs are presented below.



```
kali-linux-2022.4-virtualbox-amd64 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
1 2 3 4
File Actions Edit View Help
(kali@kali)-[~]
$ ping google.com
PING google.com (142.250.182.142) 56(84) bytes of data:
64 bytes from maa05s22-in-f14.1e100.net (142.250.182.142): icmp_seq=1 ttl=116 time=23.2 ms
64 bytes from maa05s22-in-f14.1e100.net (142.250.182.142): icmp_seq=2 ttl=116 time=24.4 ms
64 bytes from maa05s22-in-f14.1e100.net (142.250.182.142): icmp_seq=3 ttl=116 time=39.2 ms
64 bytes from maa05s22-in-f14.1e100.net (142.250.182.142): icmp_seq=4 ttl=116 time=34.8 ms
64 bytes from maa05s22-in-f14.1e100.net (142.250.182.142): icmp_seq=5 ttl=116 time=23.0 ms
64 bytes from maa05s22-in-f14.1e100.net (142.250.182.142): icmp_seq=6 ttl=116 time=23.9 ms
^C
--- google.com ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5038ms
rtt min/avg/max/mdev = 22.991/28.082/39.236/6.451 ms
```



```
Command Prompt
Microsoft Windows [Version 10.0.22631.4602]
(c) Microsoft Corporation. All rights reserved.

C:\Users\dell>ping google.com

Pinging google.com [142.250.182.142] with 32 bytes of data:
Reply from 142.250.182.142: bytes=32 time=26ms TTL=117
Reply from 142.250.182.142: bytes=32 time=22ms TTL=117
Reply from 142.250.182.142: bytes=32 time=50ms TTL=117
Reply from 142.250.182.142: bytes=32 time=38ms TTL=117

Ping statistics for 142.250.182.142:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 22ms, Maximum = 50ms, Average = 34ms
```

The traceroute command can be executed only in linux machines and the windows alternative for traceroute is tracert. The relevant outputs are attached below.

```
(kali㉿kali)-[~]
└─$ traceroute google.com
traceroute to google.com (142.250.182.142), 30 hops max, 60 byte packets
 1  10.0.2.1 (10.0.2.1)  0.129 ms  0.076 ms  0.058 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  * * *
26  * * *
27  * * *
28  * * *
29  * * *
30  * * *
```

```
C:\Users\dell>tracert google.com

Tracing route to google.com [142.250.182.142]
over a maximum of 30 hops:

 0  0 ms  0 ms  0 ms  10.0.2.1
 1    4 ms    8 ms    4 ms  192.168.1.1
 2   707 ms  441 ms  964 ms  100.81.0.2
 3   691 ms  589 ms  267 ms  172.20.30.252
 4     *      58 ms   35 ms  125.23.98.17
 5   156 ms  234 ms   50 ms  116.119.158.151
 6     *      24 ms   24 ms  142.250.169.206
 7   390 ms   56 ms   29 ms  142.250.208.105
 8    66 ms   71 ms  161 ms  216.239.56.65
 9    21 ms   20 ms   21 ms  maa05s22-in-f14.1e100.net [142.250.182.142]

Trace complete.
```

2. Design a network with firewall and open ssh, http and https port.

Ans:

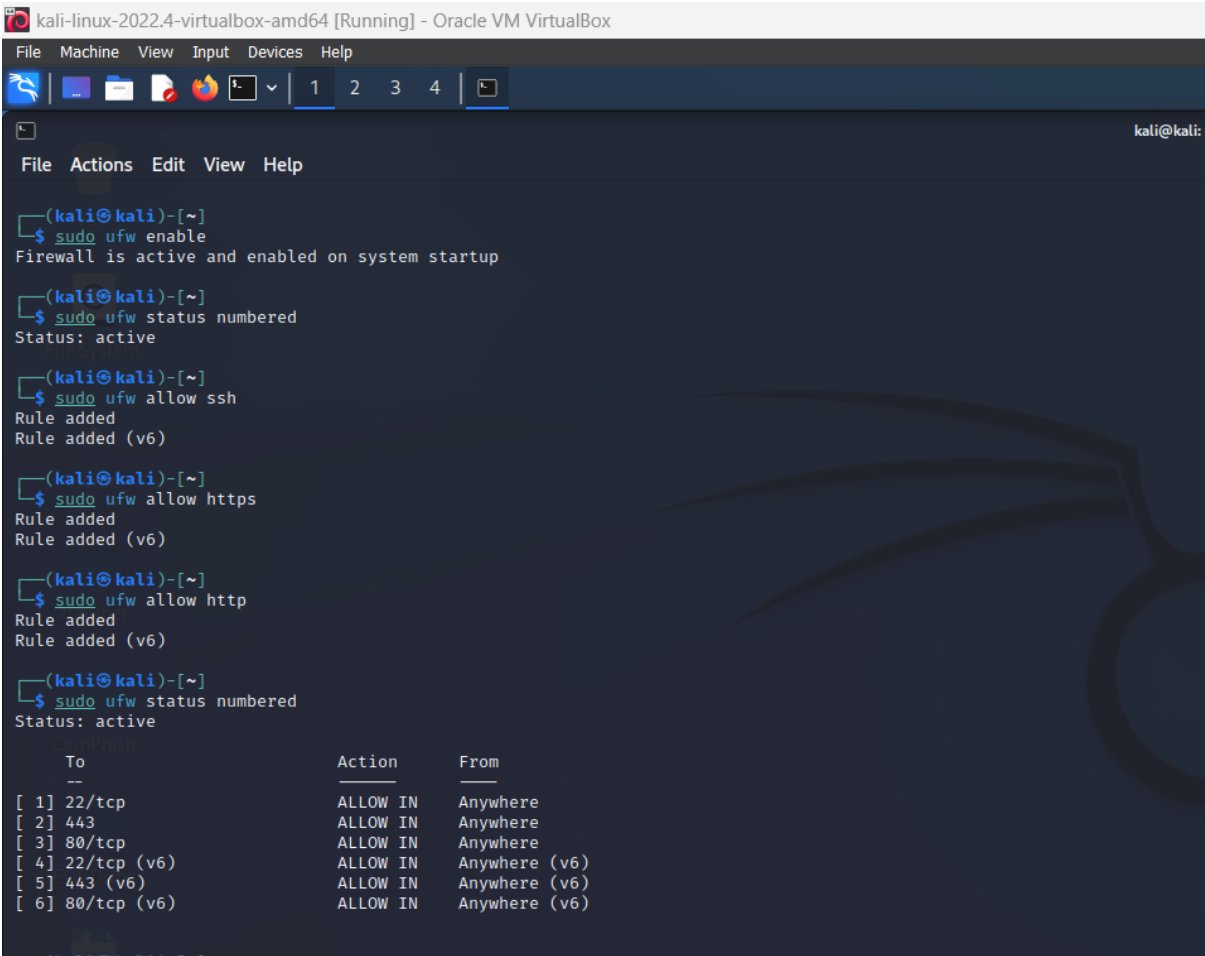
I have installed uncomplicated firewall in linux virtual machine and I enabled the firewall. I checked for the active ports in the firewall. After that I added rules to allow ssh, http, https with the commands:

```
sudo ufw allow ssh
```

```
sudo ufw allow http
```

```
sudo ufw allow https
```

The relevant firewall rules are configured to enable communication through SSH, HTTP, HTTPS ports.



The screenshot shows a terminal window titled "kali-linux-2022.4-virtualbox-amd64 [Running] - Oracle VM VirtualBox". The terminal output shows the following commands and their results:

```
(kali@kali)-[~]
$ sudo ufw enable
Firewall is active and enabled on system startup

(kali@kali)-[~]
$ sudo ufw status numbered
Status: active

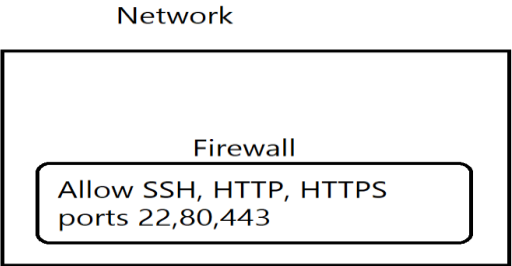
(kali@kali)-[~]
$ sudo ufw allow ssh
Rule added
Rule added (v6)

(kali@kali)-[~]
$ sudo ufw allow https
Rule added
Rule added (v6)

(kali@kali)-[~]
$ sudo ufw allow http
Rule added
Rule added (v6)

(kali@kali)-[~]
$ sudo ufw status numbered
Status: active
```

To	Action	From
[1] 22/tcp	ALLOW IN	Anywhere
[2] 443	ALLOW IN	Anywhere
[3] 80/tcp	ALLOW IN	Anywhere
[4] 22/tcp (v6)	ALLOW IN	Anywhere (v6)
[5] 443 (v6)	ALLOW IN	Anywhere (v6)
[6] 80/tcp (v6)	ALLOW IN	Anywhere (v6)



As shown in the picture we configured the rules for the firewall allowing specific ports such as SSH, HTTP, HTTPS.