# FCS REPORT

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**Question 4**

a)
Steps:

1. I installed ‘knockd’ on my system
2. Configured the knockd.conf file to change the default values of the port knocking sequence.
3. Added entried for SSH port on port 22 and FTP port on port 21
4. Used ‘ip addr’ to check the network interface I would be using knocking on.
   In my case it is ‘wlan0’
5. Then i edited the knockd control file to enable knocking and modified the file to write my network interface in the file.
6. Then I used ‘service knockd status ’ to check status of the knockd service and then I used ‘service knockd start’ to enable the knockd service.
7. Later I used my another machine to knock and then connect on the ssh port
8. In the end I used knock to close the ssh port .

Reasoning of iptable rule :
I used

> “sbin/iptables -I INPUT -s %IP% -p tcp --dport 22 -j ACCEPT”

As using the -i flag i can insert the rule at the top of the table rather than appending the rule at the bottom as if any rule above the new connection rule closes the ssh port then the newly made ssh connection cannot execute due to the priority in which the rules are executed.

Hence if I want to open or close a port after knocking then I should insert it at the top of the table rather than appending it to the bottom to avoid any unintended behaviour.

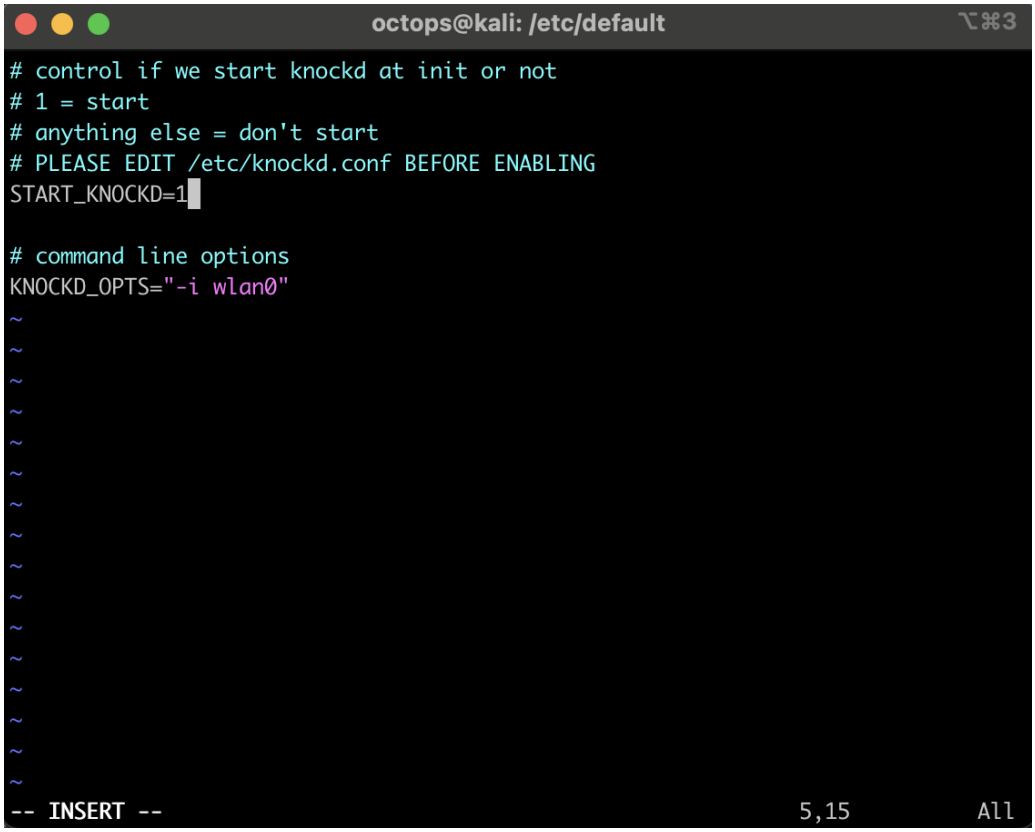
Screenshots of the process:

```
┌──(octops㉿kali)-[/etc]
└─$ cat knockd.conf
[options]
        logfile = /var/log/knockd.log

[openSSH]
        sequence    = 5460,1500,9800
        seq_timeout = 10
        command     = /sbin/iptables -I INPUT -s %IP% -p tcp --dport 22 -j ACCEPT
        tcpflags    = syn

[closeSSH]
        sequence    = 9200,8010,7320
        seq_timeout = 10
        command     = /sbin/iptables -D INPUT -s %IP% -p tcp --dport 22 -j ACCEPT
        tcpflags    = syn

[openFTP]
        sequence    = 5200,1100,9000
        seq_timeout = 10
        command     = /sbin/iptables -I INPUT -s %IP% -p tcp --dport 21 -j ACCEPT
        tcpflags    = syn

[closeFTP]
        sequence    = 9000,8010,7020
        seq_timeout = 10
        command     = /sbin/iptables -D INPUT -s %IP% -p tcp --dport 21 -j ACCEPT
        tcpflags    = syn

┌──(octops㉿kali)-[/etc]
└─$
```

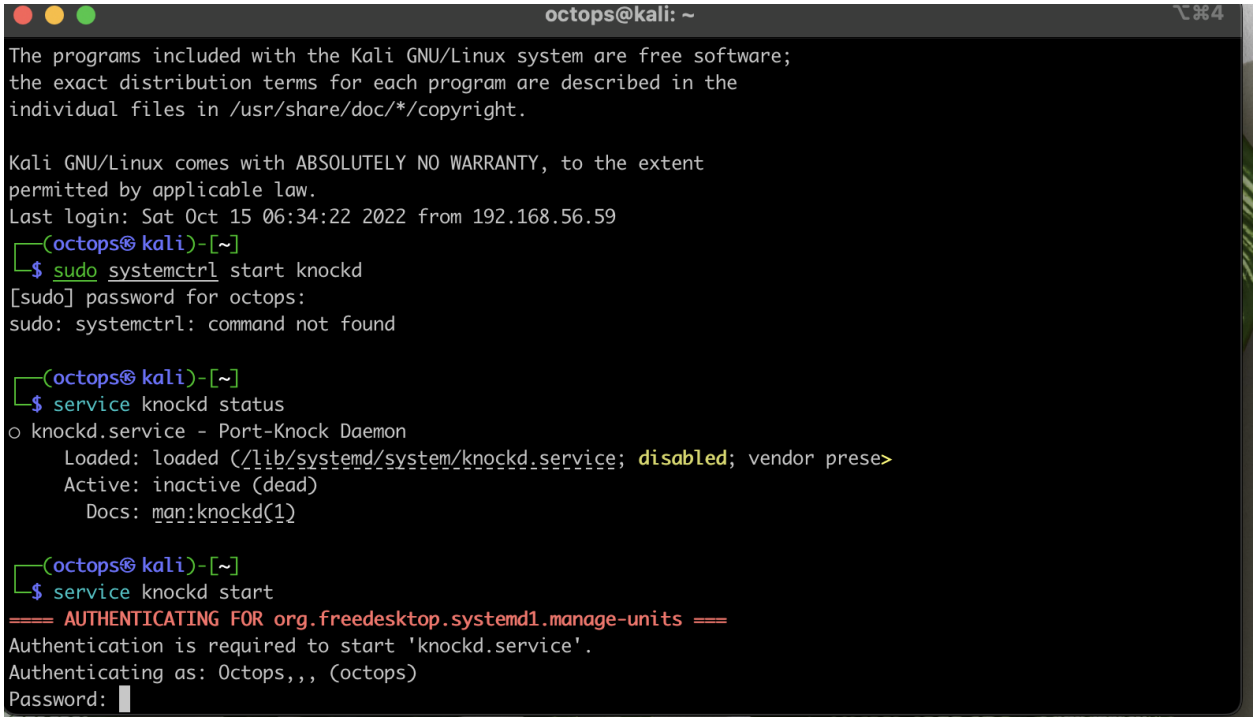
Modified conf file

```
┌──(octops㉿kali)-[/etc]
└─$ ip addr
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: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc fq_codel state DOWN group default qlen 1000
    link/ether 20:47:47:36:5b:39 brd ff:ff:ff:ff:ff:ff
3: wlan0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether b0:c0:90:1c:4f:af brd ff:ff:ff:ff:ff:ff
    inet 192.168.59.58/20 brd 192.168.63.255 scope global dynamic noprefixroute wlan0
       valid_lft 2511sec preferred_lft 2511sec
    inet6 fe80::b2c0:90ff:fe1c:4faf/64 scope link noprefixroute
       valid_lft forever preferred_lft forever

┌──(octops㉿kali)-[/etc]
```

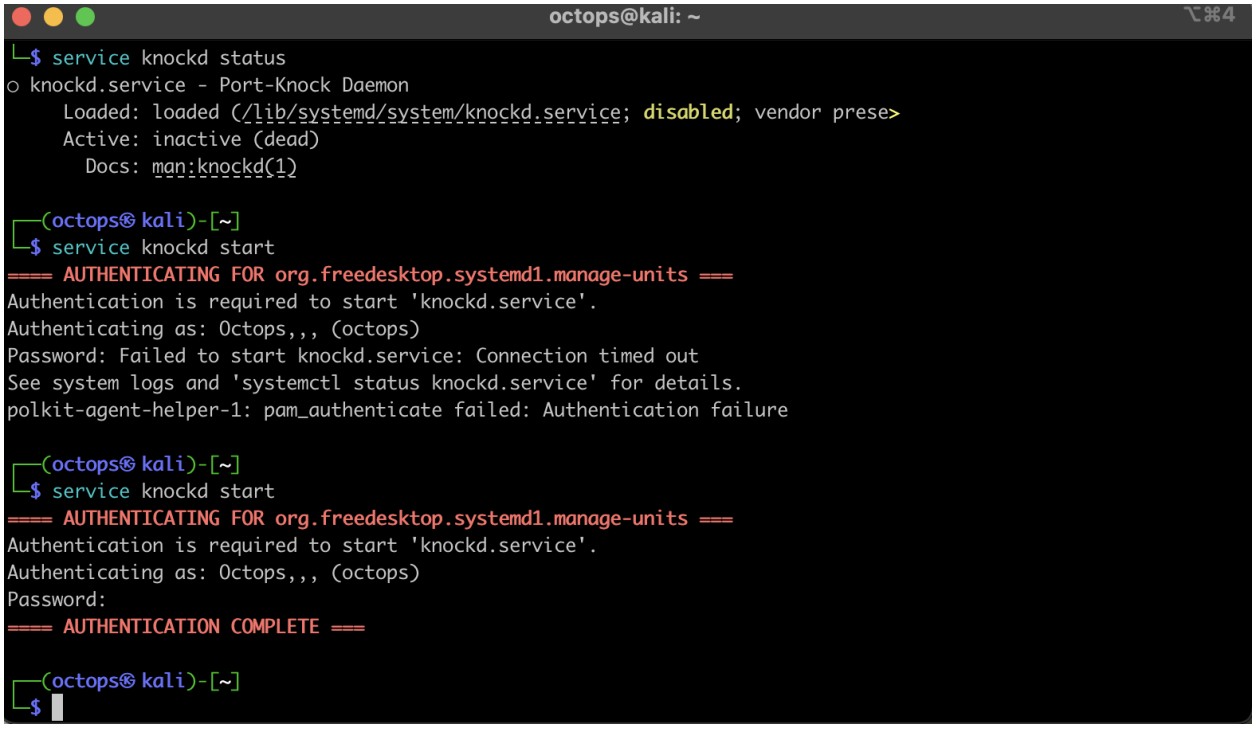
Checking network interface



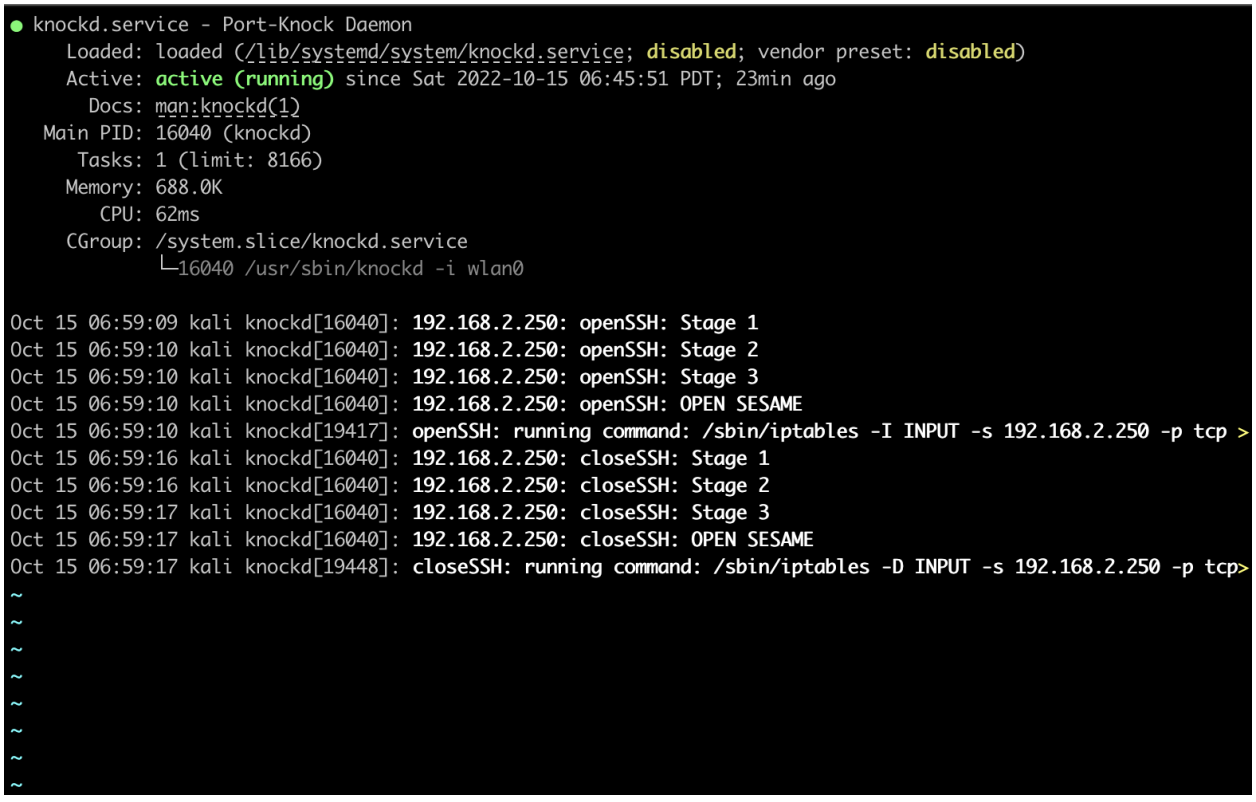

Editing knock control file




Enabling service




Enabled knockd service successfully




Log file for knocking process and connections

b)TCP prevents anyone from sending loads of request at multiple ports very quickly to avoid congestion hence it prevents attackers from brute forcing the knocking sequence but the udp protocol provides no such limitation and hence it can be used to brute force the knocking sequence by sending many requests at multiple ports at once.
TCP protocol also ensures security of the connection and all the communications done over tcp once the connection is established can be ensured to be more secure than the UDP protocol as UDP protocol is the bare bones algorithm which provides no such security and confidentiality guarantee of the communication.

c)
The default choice of ports of knockd is not safe as these ports are known to everyone and the entire reason for knocking a port would fail if anyone can access the ports after knowing the correct sequence.
The reason to knock before allowing a certain ports is to prevent people without the correct sequence from using the ports.
If the port sequence details is leaked of left unchanged to the default value then anyone can access the ports and cause harm and hence there would be a huge threat if the knocking sequence is left at the default port sequence.