Readme

At Firewall:

Set two network interface cards on the VM working as a firewall. Link these NICs with two other VMs, acting as internal and external network.

At VM1 (Internal network):
    1. Modify routes as below:
        Delete the default route -   sudo route delete default
        Add new route to firewall - sudo route add default gw <IP_firewall_interface1>

```
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ sudo route delete default
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
link-local      0.0.0.0         255.255.0.0     U     1000   0        0 enp1s0
192.168.101.0   0.0.0.0         255.255.255.0   U     100    0        0 enp1s0
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ sudo route add default gw 192.168.101.168
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         supriya-Standar 0.0.0.0         UG    0      0        0 enp1s0
link-local      0.0.0.0         255.255.0.0     U     1000   0        0 enp1s0
192.168.101.0   0.0.0.0         255.255.255.0   U     100    0        0 enp1s0
```

At VM2 (External network):
    1. Modify routes as below:
        Delete the default route -   sudo route delete default
        Add new route to bridge - sudo route add default gw <IP_bridge>
        Add new route to firewall- sudo route add default gw <IP_firewall_interface2>

```
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ sudo route delete default
[sudo] password for supriya:
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ sudo route delete default
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
link-local      0.0.0.0         255.255.0.0     U     1000   0        0 enp1s0
192.168.102.0   0.0.0.0         255.255.255.0   U     100    0        0 enp1s0
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ sudo route add default gw 192.168.102.1
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         supriya-Super-S 0.0.0.0         UG    0      0        0 enp1s0
link-local      0.0.0.0         255.255.0.0     U     1000   0        0 enp1s0
192.168.102.0   0.0.0.0         255.255.255.0   U     100    0        0 enp1s0
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ sudo route add 192.168.101.201 gw 192.168.102.169
supriya@supriya-Standard-PC-Q35-ICH9-2009:~$ route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         supriya-Super-S 0.0.0.0         UG    0      0        0 enp1s0
link-local      0.0.0.0         255.255.0.0     U     1000   0        0 enp1s0
192.168.101.201 supriya-Standar 255.255.255.255 UGH   0      0        0 enp1s0
192.168.102.0   0.0.0.0         255.255.255.0   U     100    0        0 enp1s0
```

To run simple firewall:

python3 simple_firewall.py <interface_name_1> <interface_name_2>

```
root@supriya-Standard-PC-Q35-ICH9-2009:/home/supriya/firewall_asgn# python3 simple_firewall.py enp1s0 enp6s0
Firewall is Running
ETHERNET:
Destination MAC: 01:80:c2:00:00:00      Source MAC: fe:54:00:98:16:b3

 =========================
ETHERNET:
Destination MAC: 01:80:c2:00:00:00      Source MAC: fe:54:00:98:16:b3

 =========================
SENT TO INTERNEEEEEEEEEEEETTTTT
ETHERNET:
Destination MAC: 52:54:00:98:16:b3      Source MAC: 52:54:00:65:a8:c1

IP:
Source IP: 35.81.71.18  Destination IP: 192.168.101.168

TCP:
Source Port: 443        Destination Port: 60060
```

To run adv_firewall.py :

python3 adv_firewall.py <interface_name_1> <interface_name_2>

```
root@supriya-Standard-PC-Q35-ICH9-2009:/home/supriya/firewall_asgn# python3 adv_firewall.py enp1s0 enp6s0

1. Start firewall

2. Add rule

3. Delete rule

4. Update rule

5. Show statistics

6. Detect DOS attack
Please enter your choice !! :
```