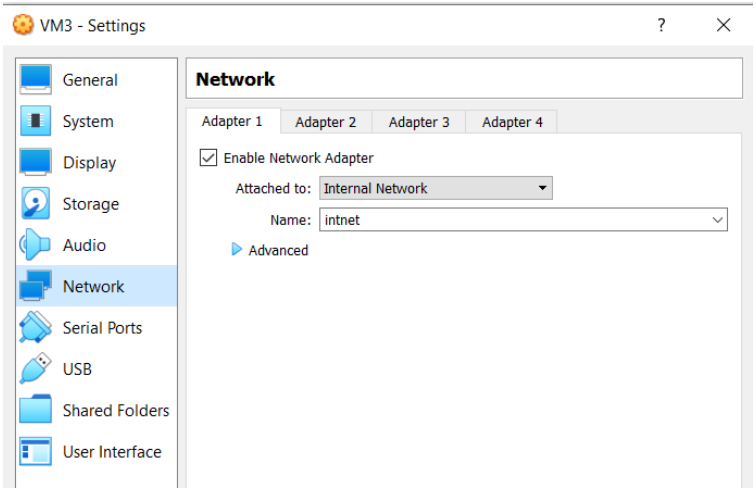
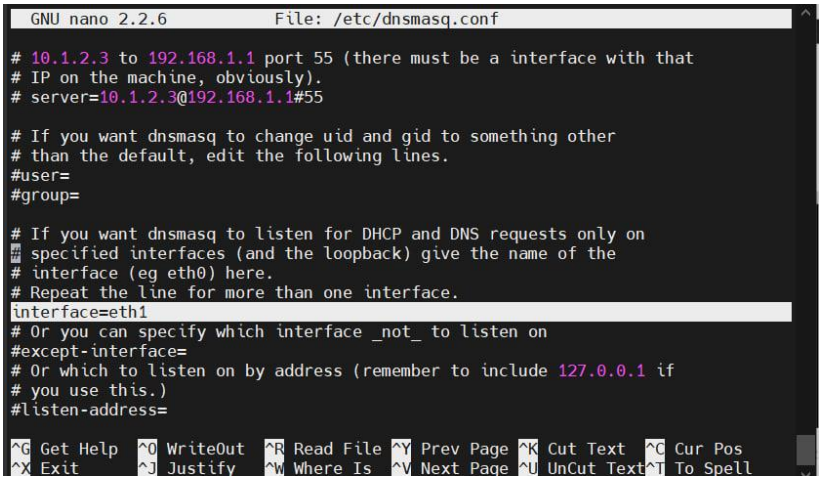
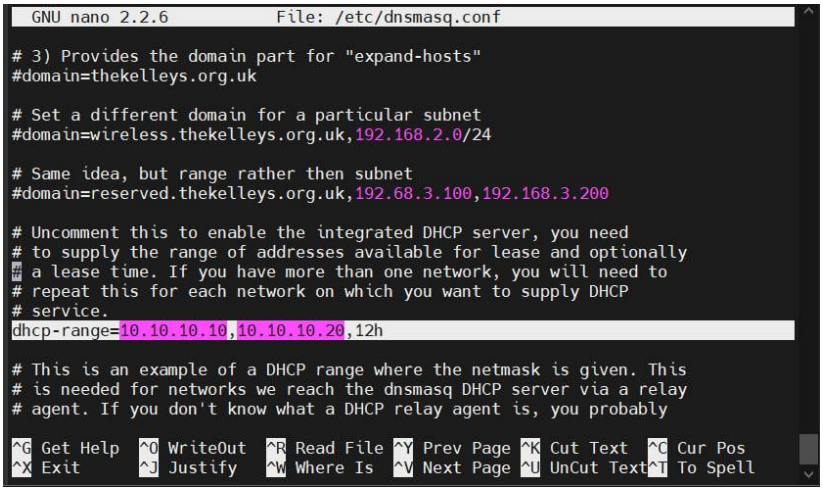
1) Use already created internal-network for three VMs (VM1-VM3). VM1 has NAT and internal, VM2, VM3 – internal only interfaces.



2) Install and configure DHCP server on VM1.





3) Check VM2 and VM3 for obtaining network addresses from DHCP server.

VM3 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

```
  GNU nano 2.2.6         File: /etc/network/interfaces

# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
auto eth0
iface eth0 inet dhcp
```

```
student@VM3:~$ ifconfig -a
eth0      Link encap:Ethernet  HWaddr 08:00:27:80:43:33
          inet addr:10.10.10.20  Bcast:10.10.10.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fe80:4333/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:10 errors:0 dropped:0 overruns:0 frame:0
          TX packets:34 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1726 (1.7 KB)  TX bytes:3400 (3.4 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:32 errors:0 dropped:0 overruns:0 frame:0
          TX packets:32 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:2480 (2.4 KB)  TX bytes:2480 (2.4 KB)

student@VM3:~$
```

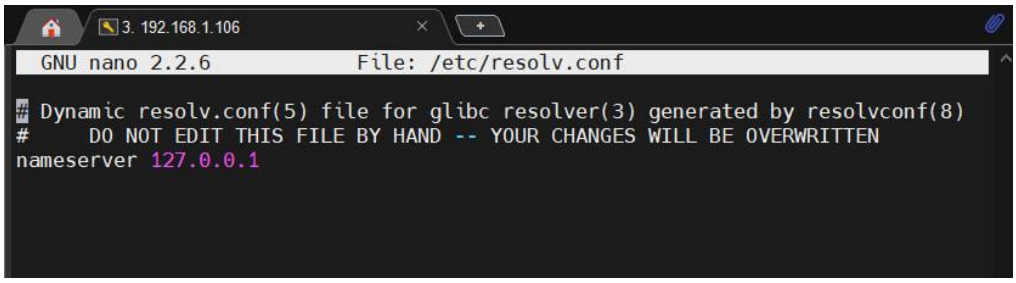
VM2 [Running] - Oracle VM VirtualBox

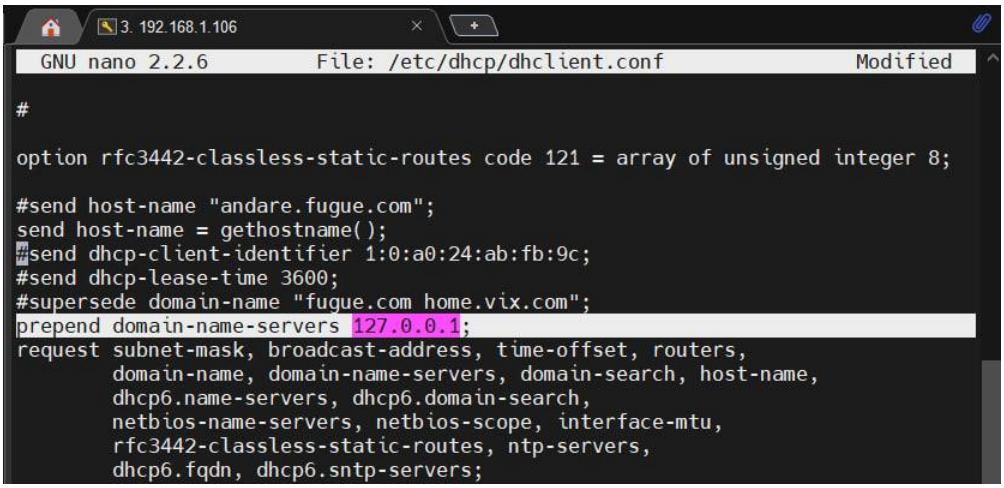
File Machine View Input Devices Help

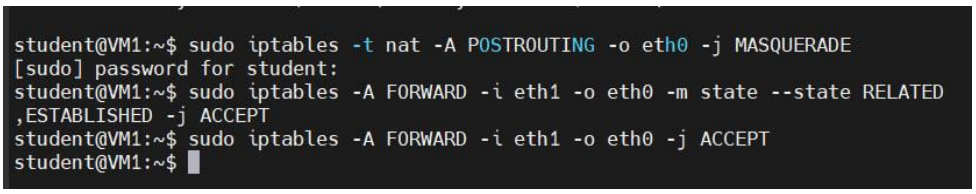
```
  GNU nano 2.2.6         File: /etc/network/interfaces

# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
auto eth0
iface eth0 inet dhcp
```

```
student@VM2:~$ ifconfig -a
eth0      Link encap:Ethernet  HWaddr 08:00:27:d4:88:39
          inet addr:10.10.10.10  Bcast:10.10.10.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fed4:8839/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:22 errors:0 dropped:0 overruns:0 frame:0
          TX packets:44 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:3856 (3.8 KB)  TX bytes:6820 (6.8 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:32 errors:0 dropped:0 overruns:0 frame:0
          TX packets:32 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:2480 (2.4 KB)  TX bytes:2480 (2.4 KB)

student@VM2:~$ _
```

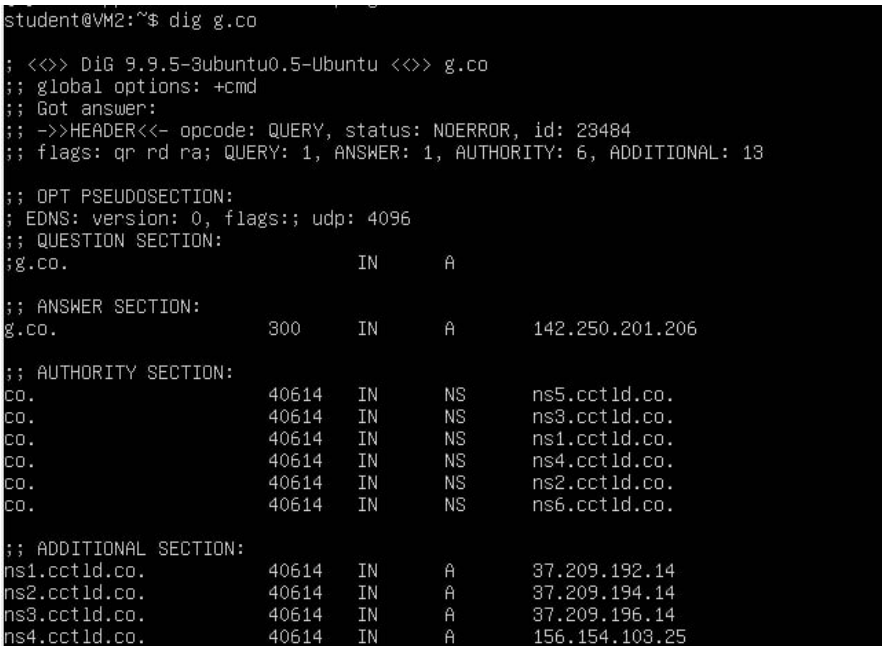
4) Using existed network for three VMs (from p.1) install and configure DNS server on VM1.







5) Check VM2 and VM3 for gaining access to DNS server (naming services).




student@VM3:~$ dig g.co
; <<>> DiG 9.9.5-3ubuntu0.5-Ubuntu <<>> g.co
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 6962
;; flags: qr rd ra ad; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 0
;; QUESTION SECTION:
;g.co. IN A
;; ANSWER SECTION:
g.co. 240 IN A 142.250.201.206
;; Query time: 3 msec
;; SERVER: 10.10.10.1#53(10.10.10.1)
;; WHEN: Sun Aug 20 13:08:04 UTC 2023
;; MSG SIZE rcvd: 38
student@VM3:~$