1. Create virtual machines connection according to figure 1:

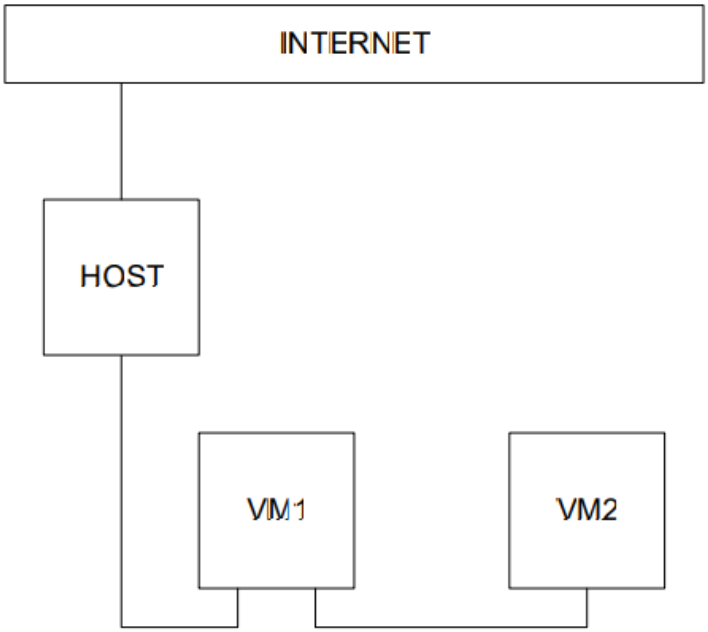
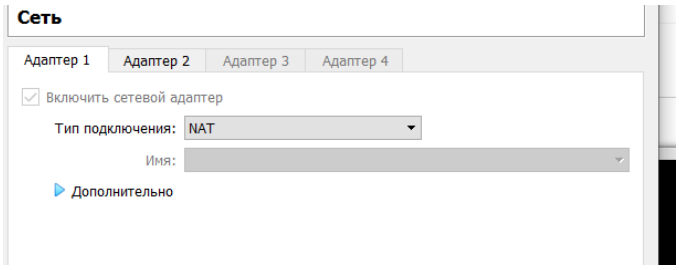
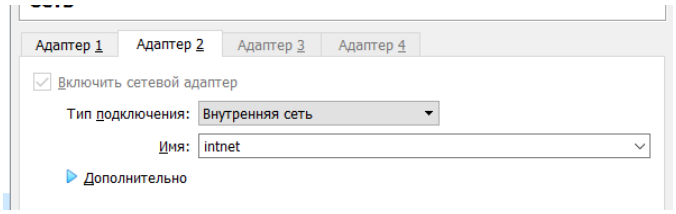


Figure 1 – VMs connection

2. VM2 has one interface (internal), VM1 has 2 interfaces (NAT and internal). Configure all network interfaces in order to make VM2 has an access to the Internet (iptables, forward, masquerade).

VM1 configure:





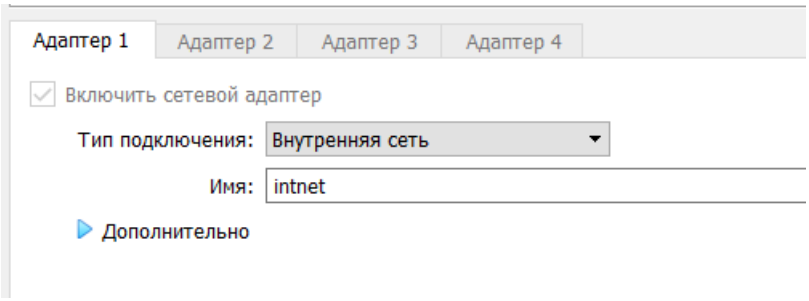
```
Файл  Машина  Вид  Ввод  Устройства  Справка
  GNU nano 2.2.6         File: /etc/network/interfaces

# 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

#internal
auto eth1
iface eth1 inet static
#network 10.10.10.0
address 10.10.10.1
netmask 255.255.255.0
broadcast 10.10.10.255
```

Имя	Протокол	Адрес хоста	Порт хоста	Адрес гостя	Порт гостя
Rule 1	TCP	192.168.0.103	2223	10.0.2.15	22

```
  GNU nano 2.2.6            File: /etc/sysctl.conf
#

# Uncomment the next two lines to enable Spoof protection (reverse-path filter
# Turn on Source Address Verification in all interfaces to
# prevent some spoofing attacks
#net.ipv4.conf.default.rp_filter=1
#net.ipv4.conf.all.rp_filter=1

# Uncomment the next line to enable TCP/IP SYN cookies
# See http://lwn.net/Articles/277146/
# Note: This may impact IPv6 TCP sessions too
#net.ipv4.tcp_syncookies=1

# Uncomment the next line to enable packet forwarding for IPv4
net.ipv4.ip_forward=1

# Uncomment the next line to enable packet forwarding for IPv6
#  Enabling this option disables Stateless Address Autoconfiguration
#  based on Router Advertisements for this host
#net.ipv6.conf.all.forwarding=1


###################################################################
# Additional settings - these settings can improve the network
```

Reboot after forwarding on

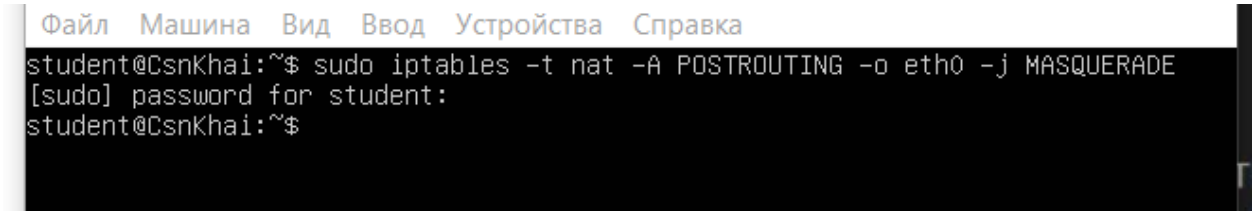
VM2 configure:



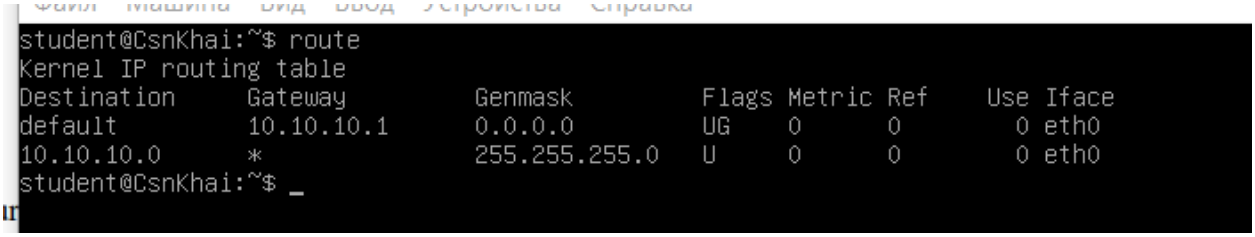

```
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

# The loopback network interface
auto lo
iface lo inet loopback

# internal
auto eth0
iface eth0 inet static
address 10.10.10.2
netmask 255.255.255.0
broadcast 10.10.10.255
gateway 10.10.10.1
```

Switch on themasquerade at VM1:

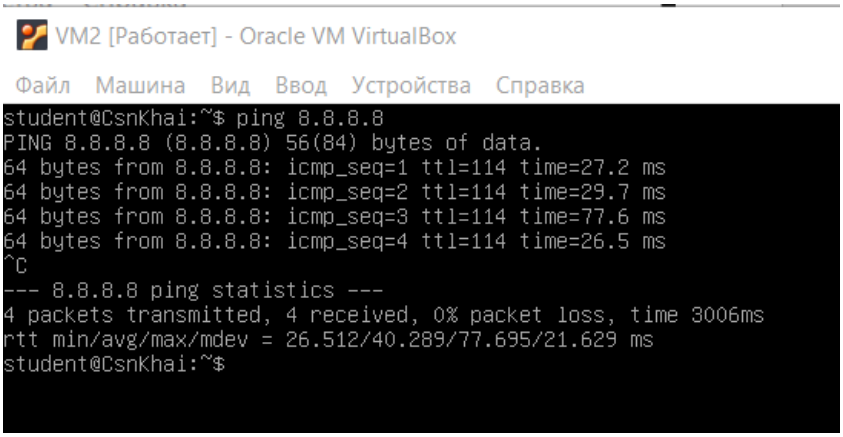
sudo iptables -t nat -A POSTROUTING -o eth0 -j MASQUERADE



3) Check the route from VM2 to Host.

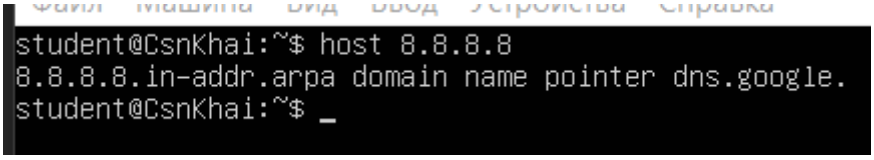


4) Check the access to the Internet, (just ping, for example, 8.8.8.8)



5) Determine, which resource has an IP address 8.8.8.8.

host 8.8.8.8



6) Determine, which IP address belongs to resource epam.com.

host epam.com or ns lookup epam.com

Also we can use nmap epam.com, but it’s not a good way

```
student@CsnKhai:~$ host 8.8.8.8
8.8.8.8.in-addr.arpa domain name pointer dns.google.
student@CsnKhai:~$ host epam.com
epam.com has address 3.214.134.159
epam.com mail is handled by 10 mxa-0039f301.gslb.pphosted.com.
epam.com mail is handled by 10 mxb-0039f301.gslb.pphosted.com.
student@CsnKhai:~$ _
```

```
student@CsnKhai:~$ nslookup epam.com
Server:         192.168.0.1
Address:        192.168.0.1#53

Non-authoritative answer:
Name:   epam.com
Address: 3.214.134.159
```

```
student@CsnKhai:~$ nmap epam.com

Starting Nmap 6.40 ( http://nmap.org ) at 2021-11-21 13:22 UTC
Nmap scan report for epam.com (3.214.134.159)
```

7) Determine the default gateway for your HOST and display routing table

```
student@CsnKhai:~$ route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         10.0.2.2        0.0.0.0         UG    0      0        0 eth0
10.0.2.0        *               255.255.255.0   U     0      0        0 eth0
10.10.10.0      *               255.255.255.0   U     0      0        0 eth1
student@CsnKhai:~$
```

8) Trace the route to google.com

```
student@CsnKhai:~$ traceroute google.com
traceroute to google.com (142.250.201.206), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  0.055 ms  0.028 ms  0.020 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
```