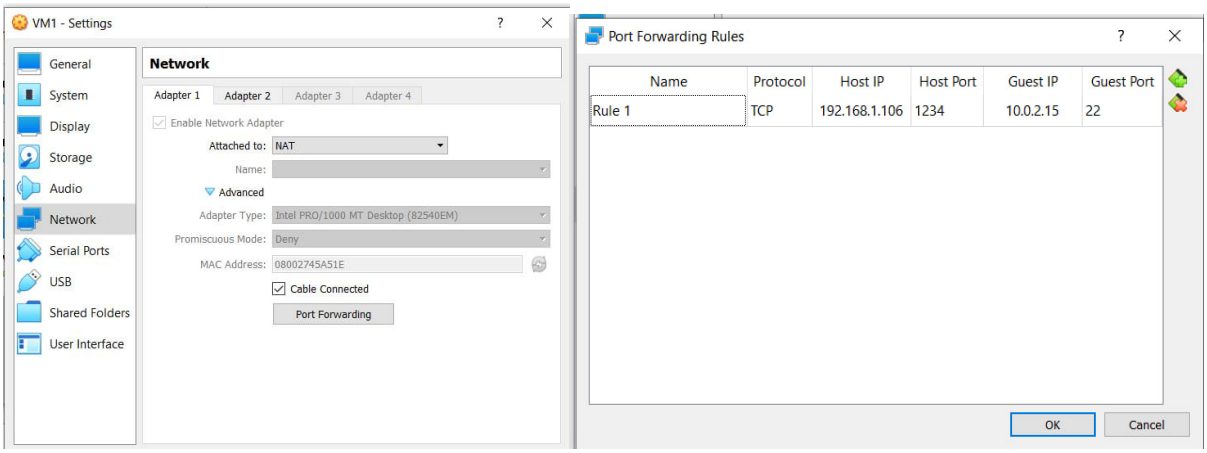
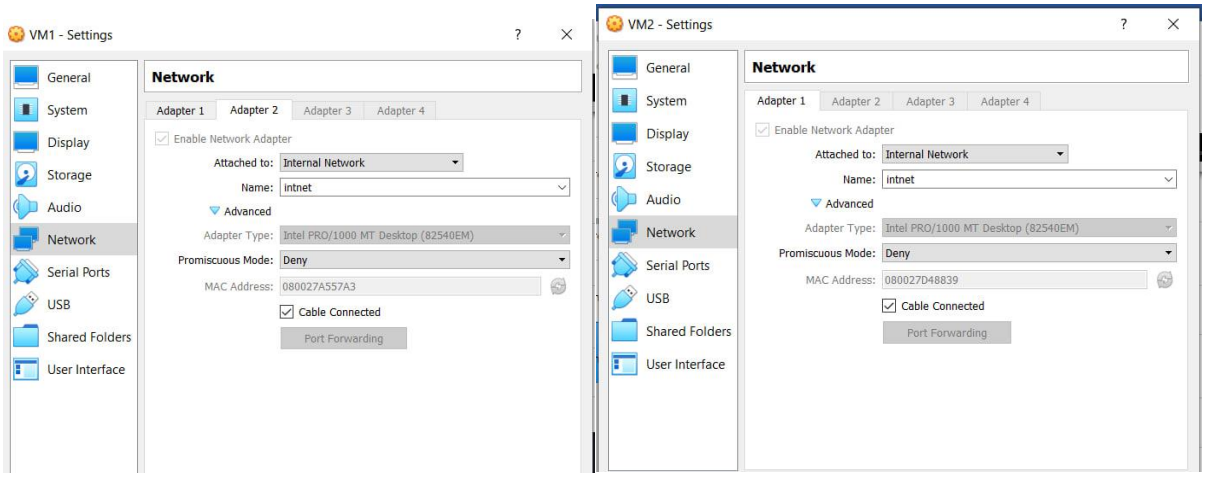
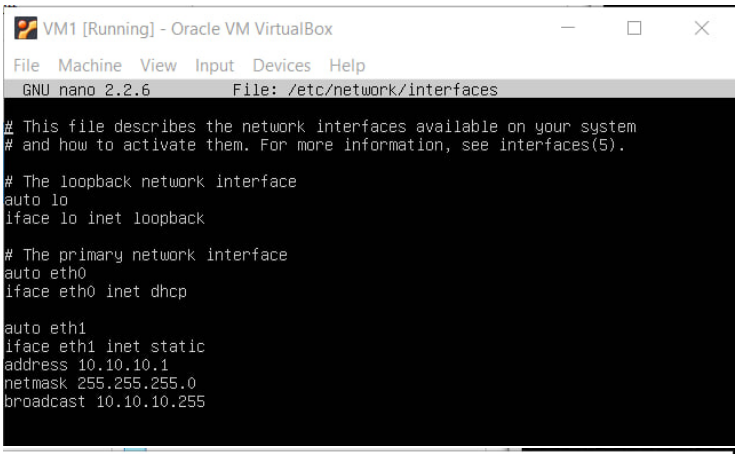
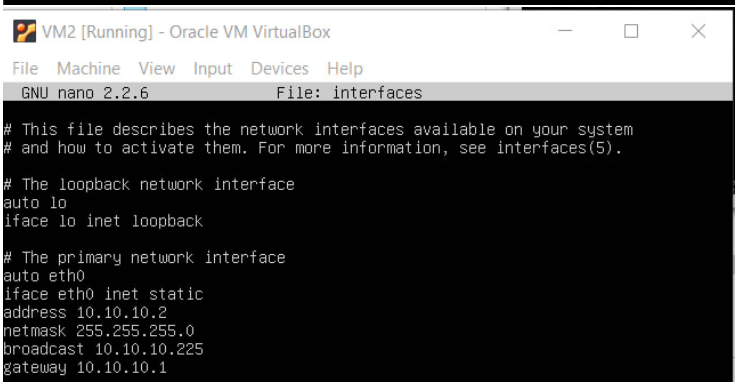
1) Create virtual machines connection according to figure.





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).





```
student@VM1:~$ sudo iptables -t nat -A POSTROUTING -o eth0 -j MASQUERADE
[sudo] password for student:
student@VM1:~$ sudo iptables -A FORWARD -i eth1 -o eth0 -m state --state RELATED
,ESTABLISHED -j ACCEPT
student@VM1:~$ sudo iptables -A FORWARD -i eth1 -o eth0 -j ACCEPT
student@VM1:~$ sudo iptables -S
-P INPUT ACCEPT
-P FORWARD ACCEPT
-P OUTPUT ACCEPT
-A FORWARD -i eth1 -o eth0 -m state --state RELATED,ESTABLISHED -j ACCEPT
-A FORWARD -i eth1 -o eth0 -j ACCEPT
student@VM1:~$
```

3) Check the route from VM2 to Host.

```
student@VM2:~$ ping -c 4 192.168.1.106
PING 192.168.1.106 (192.168.1.106) 56(84) bytes of data.
64 bytes from 192.168.1.106: icmp_seq=1 ttl=126 time=2.71 ms
64 bytes from 192.168.1.106: icmp_seq=2 ttl=126 time=2.02 ms
64 bytes from 192.168.1.106: icmp_seq=3 ttl=126 time=3.00 ms
64 bytes from 192.168.1.106: icmp_seq=4 ttl=126 time=3.17 ms

--- 192.168.1.106 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3009ms
rtt min/avg/max/mdev = 2.026/2.730/3.179/0.439 ms
student@VM2:~$
```

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

```
student@VM2:~$ ping -c 4 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=115 time=42.2 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=115 time=30.8 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=115 time=29.9 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=115 time=28.4 ms

--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3012ms
rtt min/avg/max/mdev = 28.413/32.853/42.210/5.474 ms
student@VM2:~$
```

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

The IP address 8.8.8.8 is a public DNS (Domain Name System) resolver operated by Google.

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

```
student@VM1:~$ ping epam.com
PING epam.com (3.214.134.159) 56(84) bytes of data.
```

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

```
Wireless LAN adapter Беспроводная сеть 2:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::8c4f:8f1e:caae:b52d%16
   IPv4 Address. . . . . . . . . . . : 192.168.1.106
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.1.1

Ethernet adapter Сетевое подключение Bluetooth 2:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

C:\Users\acer>
```

```
IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0      192.168.1.1    192.168.1.106     50
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    331
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    331
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    331
      169.254.0.0      255.255.0.0         On-link   169.254.148.156    281
      169.254.0.0      255.255.0.0         On-link   169.254.140.114    281
      169.254.0.0      255.255.0.0         On-link    169.254.63.124    281
    169.254.63.124  255.255.255.255         On-link    169.254.63.124    281
  169.254.140.114  255.255.255.255         On-link   169.254.140.114    281
  169.254.148.156  255.255.255.255         On-link   169.254.148.156    281
  169.254.255.255  255.255.255.255         On-link   169.254.148.156    281
  169.254.255.255  255.255.255.255         On-link   169.254.140.114    281
  169.254.255.255  255.255.255.255         On-link    169.254.63.124    281
      192.168.1.0    255.255.255.0         On-link     192.168.1.106    306
    192.168.1.106  255.255.255.255         On-link     192.168.1.106    306
    192.168.1.255  255.255.255.255         On-link     192.168.1.106    306
        224.0.0.0        240.0.0.0         On-link         127.0.0.1    331
        224.0.0.0        240.0.0.0         On-link    169.254.63.124    281
        224.0.0.0        240.0.0.0         On-link   169.254.140.114    281
        224.0.0.0        240.0.0.0         On-link   169.254.148.156    281
        224.0.0.0        240.0.0.0         On-link     192.168.1.106    306
  255.255.255.255  255.255.255.255         On-link         127.0.0.1    331
  255.255.255.255  255.255.255.255         On-link    169.254.63.124    281
  255.255.255.255  255.255.255.255         On-link   169.254.140.114    281
  255.255.255.255  255.255.255.255         On-link   169.254.148.156    281
  255.255.255.255  255.255.255.255         On-link     192.168.1.106    306
===========================================================================
```

8) Trace the route to google.com.

```
student@VM1:~$ traceroute google.com
traceroute to google.com (142.251.208.142), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  0.539 ms  1.160 ms  0.588 ms
 2  10.0.2.2 (10.0.2.2)  2.664 ms  3.074 ms  2.343 ms
student@VM1:~$
```