Task 1.

1. Create virtual machines connection according to figure 1:
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).
3. Check the route from VM2 to Host.

```
student@CsnKhai:~$ route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         XiaoQiang       0.0.0.0         UG    0      0        0 eth0
192.168.31.0    *               255.255.255.0   U     0      0        0 eth0
student@CsnKhai:~$ ping 192.168.31.100
PING 192.168.31.100 (192.168.31.100) 56(84) bytes of data.
64 bytes from 192.168.31.100: icmp_seq=1 ttl=128 time=1.77 ms
64 bytes from 192.168.31.100: icmp_seq=2 ttl=128 time=2.04 ms
64 bytes from 192.168.31.100: icmp_seq=3 ttl=128 time=1.45 ms
^C
--- 192.168.31.100 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 1.457/1.758/2.042/0.239 ms
student@CsnKhai:~$
```

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

```
student@CsnKhai:~$ ping 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=118 time=18.4 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=118 time=18.8 ms
^C
--- 8.8.8.8 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 18.417/18.616/18.816/0.241 ms
student@CsnKhai:~$ ping 192.168.31.100
PING 192.168.31.100 (192.168.31.100) 56(84) bytes of data.
64 bytes from 192.168.31.100: icmp_seq=1 ttl=128 time=1.66 ms
64 bytes from 192.168.31.100: icmp_seq=2 ttl=128 time=1.45 ms
^C
--- 192.168.31.100 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 1.456/1.559/1.662/0.103 ms
student@CsnKhai:~$ ping 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=118 time=18.6 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=118 time=18.7 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=118 time=19.1 ms
^C
--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 18.616/18.841/19.157/0.230 ms
student@CsnKhai:~$
```

5. Determine, which resource has an IP address 8.8.8.8.
6. Determine, which IP address belongs to resource epam.com.

```
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:~$
```

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

```
PS C:\Users\Davig> route print
===========================================================================
Список интерфейсов
 11...6c f0 49 00 df e7 ......Realtek PCIe GbE Family Controller
 25...0a 00 27 00 00 19 ......VirtualBox Host-Only Ethernet Adapter
 26...0a 00 27 00 00 1a ......VirtualBox Host-Only Ethernet Adapter #2
  1...........................Software Loopback Interface 1
 12...00 00 00 00 00 00 00 e0 Адаптер Microsoft ISATAP
 14...00 00 00 00 00 00 00 e0 Адаптер Microsoft ISATAP #3
 18...00 00 00 00 00 00 00 e0 Адаптер Microsoft ISATAP #4
===========================================================================

IPv4 таблица маршрута
===========================================================================
Активные маршруты:
Сетевой адрес           Маска сети      Адрес шлюза       Интерфейс  Метрика
          0.0.0.0          0.0.0.0     192.168.31.1   192.168.31.100    276
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    306
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    306
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    306
     192.168.31.0    255.255.255.0         On-link    192.168.31.100    276
   192.168.31.100  255.255.255.255         On-link    192.168.31.100    276
   192.168.31.255  255.255.255.255         On-link    192.168.31.100    276
     192.168.56.0    255.255.255.0         On-link      192.168.56.1    266
     192.168.56.1  255.255.255.255         On-link      192.168.56.1    266
   192.168.56.255  255.255.255.255         On-link      192.168.56.1    266
     192.168.59.0    255.255.255.0         On-link      192.168.59.1    266
     192.168.59.1  255.255.255.255         On-link      192.168.59.1    266
   192.168.59.255  255.255.255.255         On-link      192.168.59.1    266
        224.0.0.0        240.0.0.0         On-link         127.0.0.1    306
        224.0.0.0        240.0.0.0         On-link    192.168.31.100    276
        224.0.0.0        240.0.0.0         On-link      192.168.59.1    266
        224.0.0.0        240.0.0.0         On-link      192.168.56.1    266
  255.255.255.255  255.255.255.255         On-link         127.0.0.1    306
  255.255.255.255  255.255.255.255         On-link    192.168.31.100    276
  255.255.255.255  255.255.255.255         On-link      192.168.59.1    266
  255.255.255.255  255.255.255.255         On-link      192.168.56.1    266
===========================================================================
Постоянные маршруты:
  Сетевой адрес          Маска    Адрес шлюза      Метрика
          0.0.0.0          0.0.0.0     192.168.31.1  По умолчанию
```

8. Trace the route to google.com.

```
student@CsnKhai:~$ traceroute google.com
traceroute to google.com (142.250.203.142), 30 hops max, 60 byte packets
 1  XiaoQiang (192.168.31.1)  0.905 ms  1.275 ms  1.239 ms
 2  * * *
 3  193.41.60.141 (193.41.60.141)  7.036 ms  6.991 ms  6.562 ms
 4  193.41.60.142 (193.41.60.142)  5.767 ms  5.756 ms  6.204 ms
 5  * * *
 6  108.170.248.129 (108.170.248.129)  6.566 ms 209.85.253.14 (209.85.253.14)  5
.306 ms 108.170.248.129 (108.170.248.129)  7.023 ms
 7  108.170.248.139 (108.170.248.139)  6.757 ms 108.170.248.154 (108.170.248.154
)  5.514 ms 108.170.248.139 (108.170.248.139)  6.566 ms
 8  142.251.242.37 (142.251.242.37)  20.671 ms 142.251.242.41 (142.251.242.41)
19.707 ms 72.14.239.111 (72.14.239.111)  8.229 ms
 9  142.250.37.209 (142.250.37.209)  19.777 ms  20.447 ms 216.239.35.133 (216.23
9.35.133)  71.805 ms
10  142.250.37.193 (142.250.37.193)  18.343 ms 142.250.37.209 (142.250.37.209)
19.229 ms 72.14.237.17 (72.14.237.17)  19.056 ms
11  waw07s06-in-f14.1e100.net (142.250.203.142)  19.053 ms  18.979 ms  18.892 ms
student@CsnKhai:~$
```