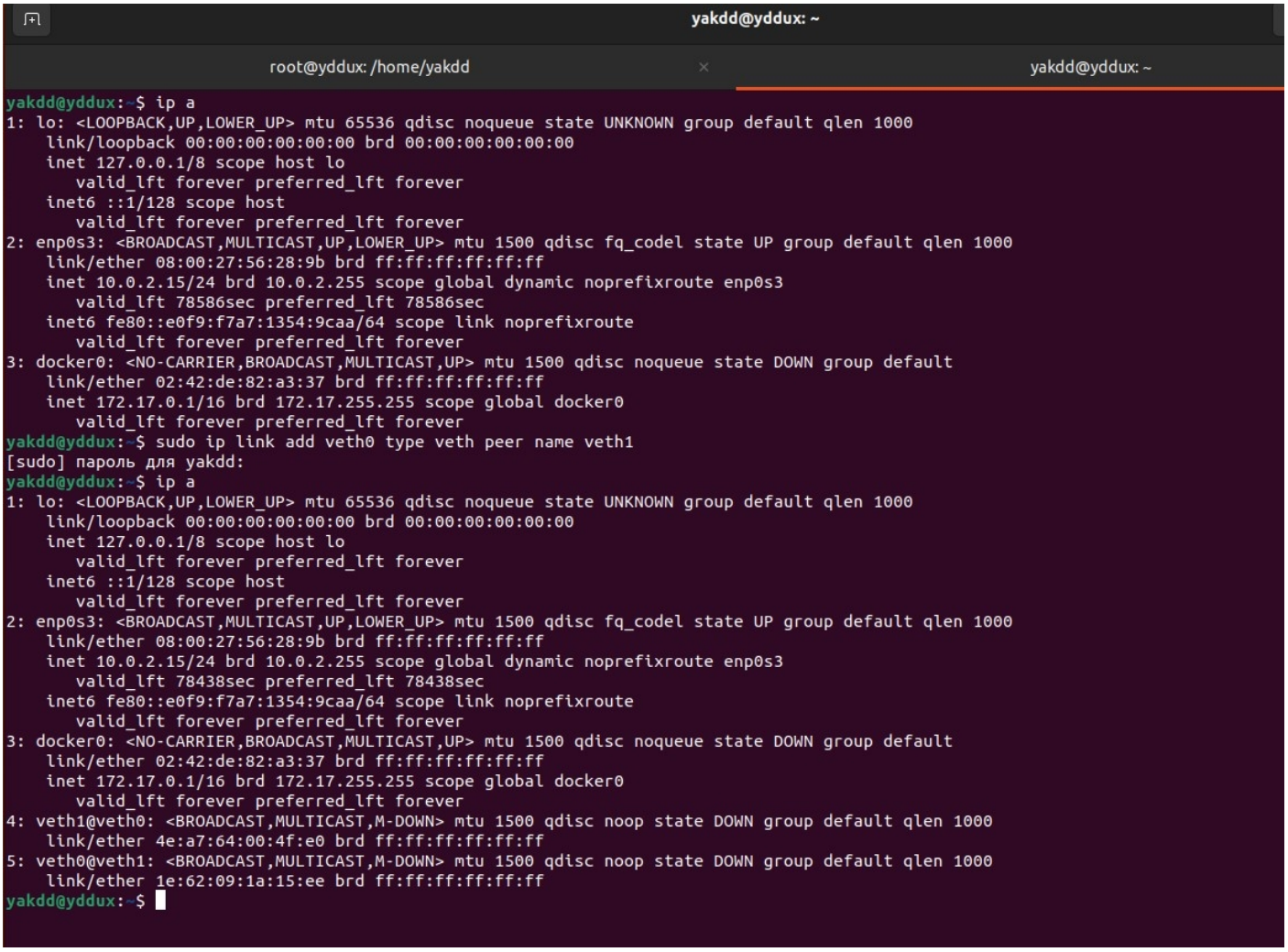
Домашняя работа №1

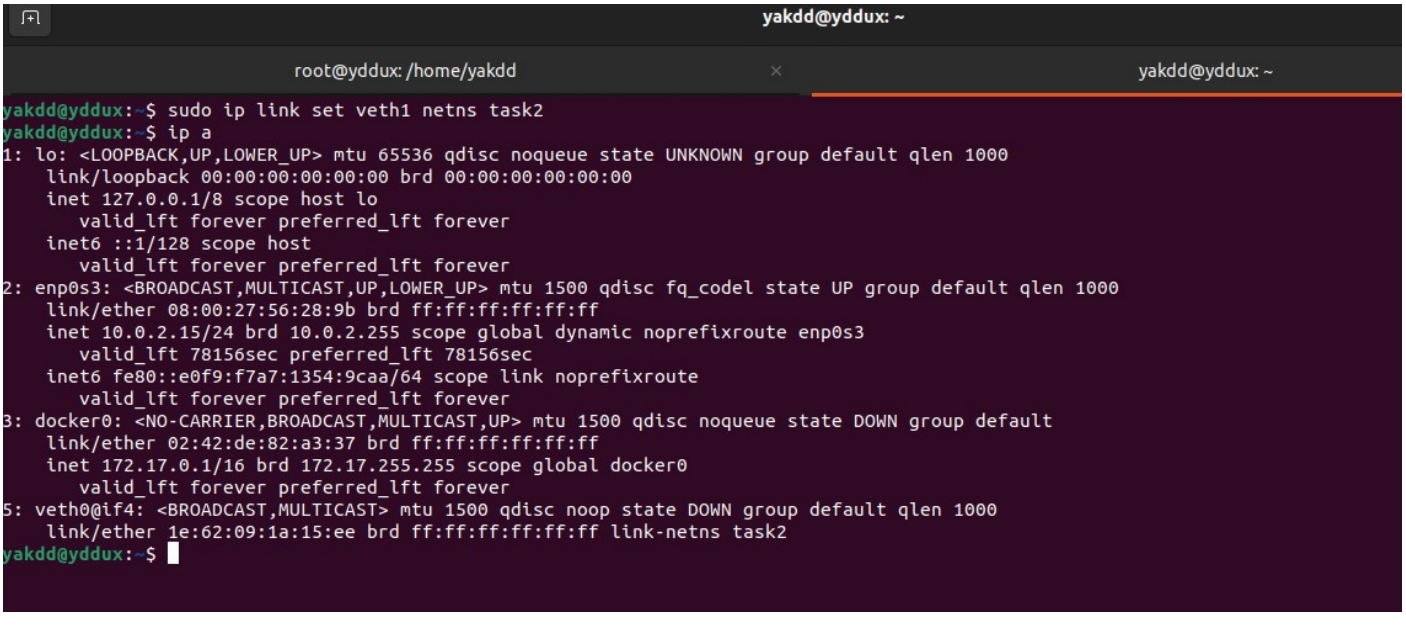
1. Сделать chroot для /bin/bash и перенести в новй корень программу ls:

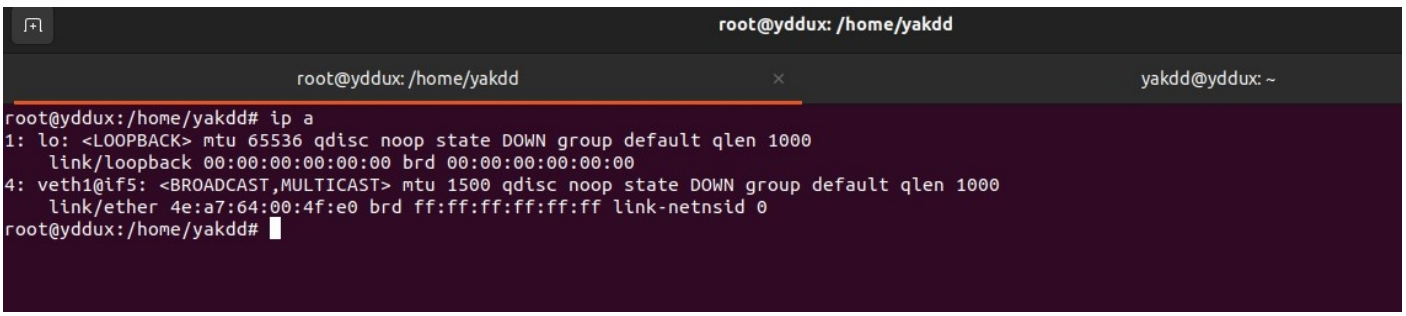
```
yakdd@yddux:~$ mkdir newroot newroot/bin
yakdd@yddux:~$ cp /bin/bash newroot/bin
yakdd@yddux:~$ ldd /bin/bash
        linux-vdso.so.1 (0x00007fff1e9a9000)
        libtinfo.so.6 => /lib/x86_64-linux-gnu/libtinfo.so.6 (0x00007fd67bdb8000)
        libc.so.6 => /lib/x86_64-linux-gnu/libc.so.6 (0x00007fd67ba00000)
        /lib64/ld-linux-x86-64.so.2 (0x00007fd67bf5b000)
yakdd@yddux:~$ mkdir newroot/lib newroot/lib64
yakdd@yddux:~$ cp /lib/x86_64-linux-gnu/libtinfo.so.6 newroot/lib
yakdd@yddux:~$ cp /lib/x86_64-linux-gnu/libc.so.6 newroot/lib
yakdd@yddux:~$ cp /lib64/ld-linux-x86-64.so.2 newroot/lib64
yakdd@yddux:~$ sudo chroot newroot/ /bin/bash
[sudo] пароль для yakdd:
bash-5.1# exit
exit
yakdd@yddux:~$ whereis ls
ls: /usr/bin/ls /usr/share/man/man1/ls.1.gz
yakdd@yddux:~$ mkdir newroot/usr newroot/usr/bin
yakdd@yddux:~$ cp /usr/bin/ls newroot/usr/bin
yakdd@yddux:~$ ldd /usr/bin/ls
        linux-vdso.so.1 (0x00007ffcb75cf000)
        libselinux.so.1 => /lib/x86_64-linux-gnu/libselinux.so.1 (0x00007f6ba548d000)
        libc.so.6 => /lib/x86_64-linux-gnu/libc.so.6 (0x00007f6ba5200000)
        libpcre2-8.so.0 => /lib/x86_64-linux-gnu/libpcre2-8.so.0 (0x00007f6ba5169000)
        /lib64/ld-linux-x86-64.so.2 (0x00007f6ba54ed000)
yakdd@yddux:~$ cp /lib/x86_64-linux-gnu/libselinux.so.1 newroot/lib
yakdd@yddux:~$ cp /lib/x86_64-linux-gnu/libc.so.6 newroot/lib
yakdd@yddux:~$ cp /lib/x86_64-linux-gnu/libpcre2-8.so.0 newroot/lib
yakdd@yddux:~$ cp /lib64/ld-linux-x86-64.so.2 newroot/lib64
yakdd@yddux:~$ sudo chroot newroot/ /bin/bash
bash-5.1# ls -l
total 16
drwxrwxr-x 2 1000 1000 4096 Jul  6 18:41 bin
drwxrwxr-x 2 1000 1000 4096 Jul  6 18:53 lib
drwxrwxr-x 2 1000 1000 4096 Jul  6 18:45 lib64
drwxrwxr-x 3 1000 1000 4096 Jul  6 18:50 usr
bash-5.1#
```

2. Повторить последовательнсть комманд с ip как на семинаре:

```
root@yddux: /home/yakdd
yakdd@yddux:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:56:28:9b brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
       valid_lft 78951sec preferred_lft 78951sec
    inet6 fe80::e0f9:f7a7:1354:9caa/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:de:82:a3:37 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
       valid_lft forever preferred_lft forever
yakdd@yddux:~$ sudo ip netns add task2
[sudo] пароль для yakdd:
yakdd@yddux:~$ sudo ip netns list
task2
yakdd@yddux:~$ sudo ip netns exec task2 bash
root@yddux:/home/yakdd# ip a
1: lo: <LOOPBACK> mtu 65536 qdisc noop state DOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
root@yddux:/home/yakdd#
```


yakdd@yddux: ~
root@yddux: /home/yakdd
yakdd@yddux: ~
yakdd@yddux:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
inet 127.0.0.1/8 scope host lo
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
link/ether 08:00:27:56:28:9b brd ff:ff:ff:ff:ff:ff
inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
valid_lft 78586sec preferred_lft 78586sec
inet6 fe80::e0f9:f7a7:1354:9caa/64 scope link noprefixroute
valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
link/ether 02:42:de:82:a3:37 brd ff:ff:ff:ff:ff:ff
inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
valid_lft forever preferred_lft forever
yakdd@yddux:~$ sudo ip link add veth0 type veth peer name veth1
[sudo] пароль для yakdd:
yakdd@yddux:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
inet 127.0.0.1/8 scope host lo
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
link/ether 08:00:27:56:28:9b brd ff:ff:ff:ff:ff:ff
inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
valid_lft 78438sec preferred_lft 78438sec
inet6 fe80::e0f9:f7a7:1354:9caa/64 scope link noprefixroute
valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
link/ether 02:42:de:82:a3:37 brd ff:ff:ff:ff:ff:ff
inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
valid_lft forever preferred_lft forever
4: veth1@veth0: <BROADCAST,MULTICAST,M-DOWN> mtu 1500 qdisc noop state DOWN group default qlen 1000
link/ether 4e:a7:64:00:4f:e0 brd ff:ff:ff:ff:ff:ff
5: veth0@veth1: <BROADCAST,MULTICAST,M-DOWN> mtu 1500 qdisc noop state DOWN group default qlen 1000
link/ether 1e:62:09:1a:15:ee brd ff:ff:ff:ff:ff:ff
yakdd@yddux:~$

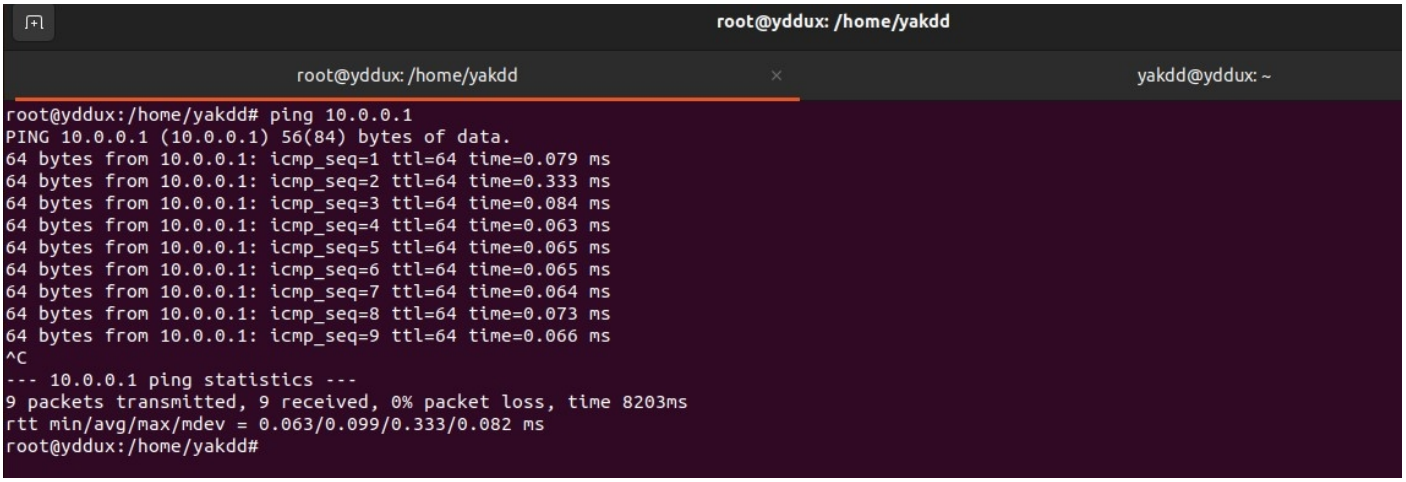

yakdd@yddux: ~
root@yddux: /home/yakdd
yakdd@yddux: ~
yakdd@yddux:~$ sudo ip link set veth1 netns task2
yakdd@yddux:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
inet 127.0.0.1/8 scope host lo
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
link/ether 08:00:27:56:28:9b brd ff:ff:ff:ff:ff:ff
inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
valid_lft 78156sec preferred_lft 78156sec
inet6 fe80::e0f9:f7a7:1354:9caa/64 scope link noprefixroute
valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
link/ether 02:42:de:82:a3:37 brd ff:ff:ff:ff:ff:ff
inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
valid_lft forever preferred_lft forever
5: veth0@if4: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
link/ether 1e:62:09:1a:15:ee brd ff:ff:ff:ff:ff:ff link-netns task2
yakdd@yddux:~$


root@yddux: /home/yakdd
root@yddux: /home/yakdd
yakdd@yddux: ~
root@yddux:/home/yakdd# ip a
1: lo: <LOOPBACK> mtu 65536 qdisc noop state DOWN group default qlen 1000
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
4: veth1@if5: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
link/ether 4e:a7:64:00:4f:e0 brd ff:ff:ff:ff:ff:ff link-netnsid 0
root@yddux:/home/yakdd#

```
yakdd@yddux: ~
root@yddux: /home/yakdd  ×  yakdd@yddux: ~
yakdd@yddux:~$ sudo ip addr add 10.0.0.1/24 dev veth0
yakdd@yddux:~$ sudo ip link set dev veth0 up
yakdd@yddux:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:56:28:9b brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
       valid_lft 77825sec preferred_lft 77825sec
    inet6 fe80::e0f9:f7a7:1354:9caa/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:de:82:a3:37 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
       valid_lft forever preferred_lft forever
5: veth0@if4: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state LOWERLAYERDOWN group default qlen 1000
    link/ether 1e:62:09:1a:15:ee brd ff:ff:ff:ff:ff:ff link-netns task2
    inet 10.0.0.1/24 scope global veth0
       valid_lft forever preferred_lft forever
yakdd@yddux:~$
```

```
root@yddux: /home/yakdd
op  root@yddux: /home/yakdd  ×  yakdd@yddux: ~
root@yddux:/home/yakdd# ip addr add 10.0.0.2/24 dev veth1
root@yddux:/home/yakdd# ip link set dev veth1 up
root@yddux:/home/yakdd# ip a
1: lo: <LOOPBACK> mtu 65536 qdisc noop state DOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
4: veth1@if5: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether 4e:a7:64:00:4f:e0 brd ff:ff:ff:ff:ff:ff link-netnsid 0
    inet 10.0.0.2/24 scope global veth1
       valid_lft forever preferred_lft forever
    inet6 fe80::4ca7:64ff:fe00:4fe0/64 scope link
       valid_lft forever preferred_lft forever
root@yddux:/home/yakdd#
```

```
yakdd@yddux: ~
root@yddux: /home/yakdd  ×  yakdd@yddux: ~
yakdd@yddux:~$ ping 10.0.0.2
PING 10.0.0.2 (10.0.0.2) 56(84) bytes of data.
64 bytes from 10.0.0.2: icmp_seq=1 ttl=64 time=0.090 ms
64 bytes from 10.0.0.2: icmp_seq=2 ttl=64 time=0.068 ms
64 bytes from 10.0.0.2: icmp_seq=3 ttl=64 time=0.075 ms
64 bytes from 10.0.0.2: icmp_seq=4 ttl=64 time=0.067 ms
64 bytes from 10.0.0.2: icmp_seq=5 ttl=64 time=0.062 ms
64 bytes from 10.0.0.2: icmp_seq=6 ttl=64 time=0.059 ms
64 bytes from 10.0.0.2: icmp_seq=7 ttl=64 time=0.068 ms
^C
--- 10.0.0.2 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6152ms
rtt min/avg/max/mdev = 0.059/0.069/0.090/0.009 ms
yakdd@yddux:~$
```



3. Повторить последовательнсть комманд с unshare как на семинаре: