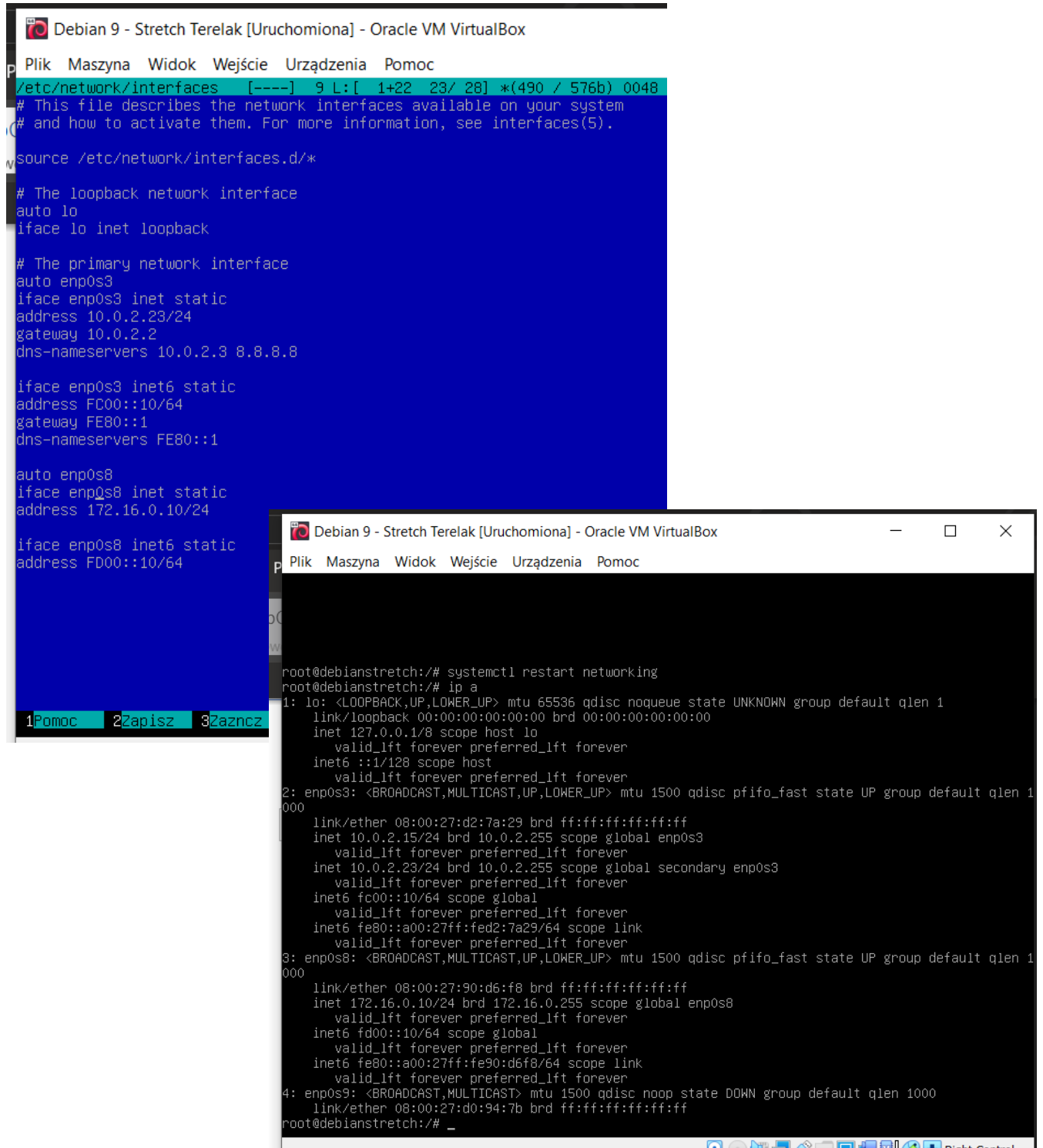


Systemy Operacyjne Moduł IV

Radosław Terelak Gr. 4G

Zadanie 1



```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
/etc/network/interfaces [----] 9 L: [ 1+22 23/ 28] *(490 / 576b) 0048
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).
source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
auto enp0s3
iface enp0s3 inet static
address 10.0.2.23/24
gateway 10.0.2.2
dns-nameservers 10.0.2.3 8.8.8.8

iface enp0s3 inet6 static
address FC00::10/64
gateway FE80::1
dns-nameservers FE80::1

auto enp0s8
iface enp0s8 inet static
address 172.16.0.10/24

iface enp0s8 inet6 static
address FD00::10/64

1Pomoc 2Zapisz 3Zaznacz

root@debianstretch:/# systemctl restart networking
root@debianstretch:/# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    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 pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:d2:7a:29 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet 10.0.2.23/24 brd 10.0.2.255 scope global secondary enp0s3
        valid_lft forever preferred_lft forever
    inet6 fc00::10/64 scope global
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fed2:7a29/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:90:d6:f8 brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.10/24 brd 172.16.0.255 scope global enp0s8
        valid_lft forever preferred_lft forever
    inet6 fd00::10/64 scope global
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe90:d6f8/64 scope link
        valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 08:00:27:d0:94:7b brd ff:ff:ff:ff:ff:ff
root@debianstretch:/# _
```

Zadanie 2

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox

Plik Maszyna Widok Wejście Urządzenia Pomoc

/etc/network/interfaces [---] 0 L:[ 1+13 14/ 21] *(332 / 440b) 0010 0x
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
auto enp0s3
iface enp0s3 inet dhcp
iface enp0s3 inet6 auto

auto enp0s8
iface enp0s8 inet static
address 172.16.0.10/24

iface enp0s8 inet6 static
address FD00::10/64
```

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox

Plik Maszyna Widok Wejście Urządzenia Pomoc

root@debianstretch:/# systemctl restart networking
root@debianstretch:/# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    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 pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:d2:7a:29 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fed2:7a29/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:90:d6:f8 brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.10/24 brd 172.16.0.255 scope global enp0s8
        valid_lft forever preferred_lft forever
    inet6 fd00::10/64 scope global
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe90:d6f8/64 scope link
        valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 08:00:27:d0:94:7b brd ff:ff:ff:ff:ff:ff
root@debianstretch:/# _
```

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox

Plik Maszyna Widok Wejście Urządzenia Pomoc

root@debianstretch:/etc/network# 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 enp0s3
10.0.2.0 0.0.0.0 255.255.255.0 U 0 0 0 enp0s3
link-local 0.0.0.0 255.255.0.0 U 1000 0 0 enp0s3
172.16.0.0 0.0.0.0 255.255.255.0 U 0 0 0 enp0s8
root@debianstretch:/etc/network# _
```

Zadanie 3

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
/etc/network/interfaces [B---] 13 L:[ 1+21 22/ 25] *(454 / 505b) 0010 0x00A
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
auto enp0s3
iface enp0s3 inet dhcp
iface enp0s3 inet6 auto

auto enp0s8
iface enp0s8 inet static
address 172.16.0.10/24

iface enp0s8 inet6 static
address FD00::10/64

auto enp0s8:1
iface enp0s8:1 inet static
address 172.16.0.11/24
```

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc

root@debianstretch:/etc/network# mcedit /etc/network/interfaces
root@debianstretch:/etc/network# systemctl restart networking
root@debianstretch:/etc/network# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    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 pfifo_fast state UP group default qlen 1
    000
    link/ether 08:00:27:d2:7a:29 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fed2:7a29/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1
    000
    link/ether 08:00:27:90:d6:f8 brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.10/24 brd 172.16.0.255 scope global enp0s8
        valid_lft forever preferred_lft forever
    inet 172.16.0.11/24 brd 172.16.0.255 scope global secondary enp0s8:1
        valid_lft forever preferred_lft forever
    inet6 fd00::10/64 scope global
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe90:d6f8/64 scope link
        valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 08:00:27:d0:94:7b brd ff:ff:ff:ff:ff:ff
root@debianstretch:/etc/network#
```

Zadanie 4

Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox

Plik Maszyna Widok Wejście Urządzenia Pomoc

```
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv4.addresses 10.0.2.25/24
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv4.gateway 10.0.2.2
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv4.method manual
[root@fedora28-srv ~]# nmcli connection up enp0s3
Pomyślnie aktywowano połączenie (ścieżka aktywacji D-Bus: /org/freedesktop/NetworkManager/ActiveConnection/14)
[root@fedora28-srv ~]# nmcli connection reload
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv6.addresses FC00::20/64
Błąd: zmodyfikowanie ipv6.addresses się nie powiodło: nieprawidłowy przedrostek „/64”: dozwolone <1-128>.
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv6.addresses FC00::20/64
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv6.method manual
[root@fedora28-srv ~]# nmcli connection up enp0s3
Pomyślnie aktywowano połączenie (ścieżka aktywacji D-Bus: /org/freedesktop/NetworkManager/ActiveConnection/15)
[root@fedora28-srv ~]# nmcli connection reload
[root@fedora28-srv ~]# nmcli connection show

```

NAME	UUID	TYPE	DEVICE
enp0s3	4eb23d96-4568-3ddb-bc52-f16517277965	ethernet	enp0s3
Połączenie przewodowe 1	576d9f86-0808-3c7a-a149-06d7fd825276	ethernet	--

```
[root@fedora28-srv ~]# _
```

Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox

Plik Maszyna Widok Wejście Urządzenia Pomoc

```
[root@fedora28-srv ~]# cat /etc/resolv.conf
# Generated by NetworkManager

nameserver 10.0.2.3
nameserver fe80::1%enp0s3
[root@fedora28-srv ~]# nmcli connection modify enp0s3 path Połączenie\ przewodowe\ 1 uuid help --temporary
id Połączenie\ przewodowe\ 1
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 ipv4.addresses 172.16.0.20/24
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 ipv4.method manual
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 ipv6.addresses FD00::20/64
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 ipv6.method manual
[root@fedora28-srv ~]# nmcli connection up Połączenie\ przewodowe\ 1
Pomyślnie aktywowano połączenie (ścieżka aktywacji D-Bus: /org/freedesktop/NetworkManager/ActiveConnection/22)
[root@fedora28-srv ~]# nmcli connection reload
[root@fedora28-srv ~]# _
```

```
[root@fedora28-srv ~]# 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:ab:92:a7 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.25/24 brd 10.0.2.255 scope global noprefixroute enp0s3
        valid_lft forever preferred_lft forever
    inet6 fc00::20/64 scope global noprefixroute
        valid_lft forever preferred_lft forever
    inet6 fe80::ac75:dd08:3478:c606/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:d5:98:41 brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.20/24 brd 172.16.0.255 scope global noprefixroute enp0s8
        valid_lft forever preferred_lft forever
    inet6 fd00::20/64 scope global noprefixroute
        valid_lft forever preferred_lft forever
    inet6 fe80::169b:733d:4214:a9f0/64 scope link
        valid_lft forever preferred_lft forever
[root@fedora28-srv ~]#
```

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv ~]# ping 172.16.0.10
PING 172.16.0.10 (172.16.0.10) 56(84) bytes of data.
64 bytes from 172.16.0.10: icmp_seq=1 ttl=64 time=0.413 ms
64 bytes from 172.16.0.10: icmp_seq=2 ttl=64 time=0.506 ms
64 bytes from 172.16.0.10: icmp_seq=3 ttl=64 time=0.403 ms
^C
--- 172.16.0.10 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2032ms
rtt min/avg/max/mdev = 0.403/0.440/0.506/0.052 ms
[root@fedora28-srv ~]# ping 172.16.0.11
PING 172.16.0.11 (172.16.0.11) 56(84) bytes of data.
64 bytes from 172.16.0.11: icmp_seq=1 ttl=64 time=0.637 ms
64 bytes from 172.16.0.11: icmp_seq=2 ttl=64 time=0.428 ms
64 bytes from 172.16.0.11: icmp_seq=3 ttl=64 time=0.425 ms
64 bytes from 172.16.0.11: icmp_seq=4 ttl=64 time=0.440 ms
^C
--- 172.16.0.11 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3108ms
rtt min/avg/max/mdev = 0.425/0.482/0.637/0.092 ms
[root@fedora28-srv ~]#
```

Połączenie jest poprawne.

Zadanie 5

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv4.method auto
[root@fedora28-srv ~]# nmcli connection up enp0s3
Pomyślnie aktywowano połączenie (ścieżka aktywacji D-Bus: /org/freedesktop/NetworkManager/ActiveConnection/23)
[root@fedora28-srv ~]# 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:ab:92:a7 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 86398sec preferred_lft 86398sec
    inet 10.0.2.25/24 brd 10.0.2.255 scope global secondary noprefixroute enp0s3
        valid_lft forever preferred_lft forever
    inet6 fc00::20/64 scope global noprefixroute
        valid_lft forever preferred_lft forever
    inet6 fe80::ac75:dd08:3478:c606/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:d5:98:41 brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.20/24 brd 172.16.0.255 scope global noprefixroute enp0s8
        valid_lft forever preferred_lft forever
    inet6 fd00::20/64 scope global noprefixroute
        valid_lft forever preferred_lft forever
    inet6 fe80::169b:733d:4214:a9f0/64 scope link
        valid_lft forever preferred_lft forever
[root@fedora28-srv ~]# ip route
default via 10.0.2.2 dev enp0s3 proto static metric 102
10.0.2.0/24 dev enp0s3 proto kernel scope link src 10.0.2.15 metric 102
10.0.2.0/24 dev enp0s3 proto kernel scope link src 10.0.2.25 metric 102
172.16.0.0/24 dev enp0s8 proto kernel scope link src 172.16.0.20 metric 101
[root@fedora28-srv ~]#
```

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv ~]# cat /etc/resolv.conf
# Generated by NetworkManager
search TL-WA050RE
nameserver 185.124.116.186
nameserver 185.124.119.252
[root@fedora28-srv ~]#
```

Zadanie 6

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 +ipv4.addresses 172.16.0.21/24
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 +ipv6.addresses FD00::21/64
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 +ipv6.addresses FD00::22/64
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 +ipv6.addresses FD00::23/64
[root@fedora28-srv ~]# nmcli connection up Połączenie\ przewodowe\ 1
Pomyślnie aktywowano połączenie (ścieżka aktywacji D-Bus: /org/freedesktop/NetworkManager/ActiveConnection/24)
[root@fedora28-srv ~]# nmcli connection reload
[root@fedora28-srv ~]#
```

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv ~]# 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:ab:92:a7 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 85924sec preferred_lft 85924sec
    inet 10.0.2.25/24 brd 10.0.2.255 scope global secondary noprefixroute enp0s3
        valid_lft forever preferred_lft forever
    inet6 fc00::20/64 scope global noprefixroute
        valid_lft forever preferred_lft forever
    inet6 fe80::ac75:dd08:3478:c606/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:d5:98:41 brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.20/24 brd 172.16.0.255 scope global noprefixroute enp0s8
        valid_lft forever preferred_lft forever
    inet 172.16.0.21/24 brd 172.16.0.255 scope global secondary noprefixroute enp0s8
        valid_lft forever preferred_lft forever
    inet6 fd00::23/64 scope global noprefixroute
        valid_lft forever preferred_lft forever
    inet6 fd00::22/64 scope global noprefixroute
        valid_lft forever preferred_lft forever
    inet6 fd00::21/64 scope global noprefixroute
        valid_lft forever preferred_lft forever
    inet6 fd00::20/64 scope global noprefixroute
        valid_lft forever preferred_lft forever
    inet6 fe80::169b:733d:4214:a9f0/64 scope link
        valid_lft forever preferred_lft forever
```

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@debianstretch:/etc/network# ping 172.16.0.21
PING 172.16.0.21 (172.16.0.21) 56(84) bytes of data:
64 bytes from 172.16.0.21: icmp_seq=1 ttl=64 time=0.782 ms
64 bytes from 172.16.0.21: icmp_seq=2 ttl=64 time=0.479 ms
64 bytes from 172.16.0.21: icmp_seq=3 ttl=64 time=0.426 ms
^C
--- 172.16.0.21 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2048ms
rtt min/avg/max/mdev = 0.426/0.562/0.782/0.158 ms
root@debianstretch:/etc/network# ping6 FD00::21
PING FD00::21(fd00::21) 56 data bytes
64 bytes from fd00::21: icmp_seq=1 ttl=64 time=0.867 ms
64 bytes from fd00::21: icmp_seq=2 ttl=64 time=0.441 ms
64 bytes from fd00::21: icmp_seq=3 ttl=64 time=0.444 ms
^C
--- FD00::21 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2056ms
rtt min/avg/max/mdev = 0.441/0.584/0.867/0.200 ms
root@debianstretch:/etc/network#
```

Zadanie 7

Początkowo *ping* **www.google.com** działa. Oto konfiguracja na maszynie Fedora:

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv ~]# ping www.google.com
PING www.google.com (142.250.203.132) 56(84) bytes of data.
64 bytes from waw07s06-in-f4.1e100.net (142.250.203.132): icmp_seq=1 ttl=120 time=10.0 ms
64 bytes from waw07s06-in-f4.1e100.net (142.250.203.132): icmp_seq=2 ttl=120 time=7.01 ms
64 bytes from waw07s06-in-f4.1e100.net (142.250.203.132): icmp_seq=3 ttl=120 time=6.60 ms
^C
--- www.google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2001ms
rtt min/avg/max/mdev = 6.608/7.883/10.027/1.526 ms
[root@fedora28-srv ~]#
```

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
hosts      [----] 0 L: 1+ 2 3/ 61 *(158 / 217b) 0010 0x00A
127.0.0.1  localhost localhost.localdomain localhost4 localhost4.localdomain4
::1       localhost localhost.localdomain localhost6 localhost6.localdomain6

172.16.0.10 debian
FD00::10 debian6
0.0.0.0 www.google.com
```

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv ~]# ping debian
PING debian (172.16.0.10) 56(84) bytes of data.
64 bytes from debian (172.16.0.10): icmp_seq=1 ttl=64 time=0.461 ms
64 bytes from debian (172.16.0.10): icmp_seq=2 ttl=64 time=0.393 ms
64 bytes from debian (172.16.0.10): icmp_seq=3 ttl=64 time=0.430 ms
^C
--- debian ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 0.393/0.428/0.461/0.027 ms
[root@fedora28-srv ~]# ping6 debian6
PING debian6(debian6 (fd00::10)) 56 data bytes
64 bytes from debian6 (fd00::10): icmp_seq=1 ttl=64 time=0.823 ms
64 bytes from debian6 (fd00::10): icmp_seq=2 ttl=64 time=0.460 ms
64 bytes from debian6 (fd00::10): icmp_seq=3 ttl=64 time=0.421 ms
^C
--- debian6 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 0.421/0.568/0.823/0.181 ms
[root@fedora28-srv ~]# ping www.google.com
PING www.google.com (127.0.0.1) 56(84) bytes of data.
64 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.042 ms
64 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.055 ms
64 bytes from localhost (127.0.0.1): icmp_seq=3 ttl=64 time=0.056 ms
^C
--- www.google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 0.042/0.051/0.056/0.006 ms
[root@fedora28-srv ~]#
```

Debian:

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
/etc/hosts [----] 22 L:[ 1+11 12/ 12] *(272 / 272b)
127.0.0.1<----->localhost
127.0.1.1<----->debianstretch.home<----->debianstretch

# The following lines are desirable for IPv6 capable hosts
::1      localhost ip6-localhost ip6-loopback
ff02::1  ip6-allnodes
ff02::2  ip6-allrouters

172.16.0.20 fedora
FD00::20 fedora6
0.0.0.0 www.google.com
```

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@debianstretch:/etc/network# ping fedora
PING fedora (172.16.0.20) 56(84) bytes of data.
64 bytes from fedora (172.16.0.20): icmp_seq=1 ttl=64 time=0.425 ms
64 bytes from fedora (172.16.0.20): icmp_seq=2 ttl=64 time=0.399 ms
^C
--- fedora ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 0.399/0.412/0.425/0.013 ms
root@debianstretch:/etc/network# ping6 fedora6
PING fedora6(fedora6 (fd00::20)) 56 data bytes
64 bytes from fedora6 (fd00::20): icmp_seq=1 ttl=64 time=0.836 ms
64 bytes from fedora6 (fd00::20): icmp_seq=2 ttl=64 time=0.434 ms
64 bytes from fedora6 (fd00::20): icmp_seq=3 ttl=64 time=0.407 ms
^C
--- fedora6 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 0.407/0.559/0.836/0.196 ms
root@debianstretch:/etc/network# ping www.google.com
PING www.google.com (127.0.0.1) 56(84) bytes of data.
64 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.023 ms
64 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.025 ms
64 bytes from localhost (127.0.0.1): icmp_seq=3 ttl=64 time=0.029 ms
^C
--- www.google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 0.023/0.025/0.029/0.006 ms
root@debianstretch:/etc/network#
```



```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 con-name enp0s8
[root@fedora28-srv ~]# nmcli connection show
NAME      UUID                                  TYPE      DEVICE
enp0s3    4eb23d96-4568-3ddb-bc52-f16517277965 ethernet  enp0s3
enp0s8    576d9f86-8888-3c7a-a149-06d7fd825276 ethernet  enp0s8
[root@fedora28-srv ~]#
```

Przy okazji zmieniłem nazwę połączenia na enp0s8.

Zadanie 8

Początkowo pinguje 127.0.0.1

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv ~]# ping www.google.com
PING www.google.com (127.0.0.1) 56(84) bytes of data.
64 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.046 ms
64 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.126 ms
^C
--- www.google.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1045ms
rtt min/avg/max/mdev = 0.046/0.086/0.126/0.040 ms
[root@fedora28-srv ~]#
```

Po edycji:

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
nsswitch.conf [---] 16 L: [ 1+16 17/ 22] *(348 / 4
# Generated by authselect on Tue May 1 21:34:28 2018
# Do not modify this file manually.

passwd:      sss files
group:        sss files
netgroup:     sss files
automount:    sss files
services:     sss files
sudoers:      files sss

shadow:       files
ethers:        files
netmasks:     files
networks:      files
protocols:     files
rpc:           files
hosts:         dns files myhostname

aliases:       files nisplus
bootparams:    nisplus [NOTFOUND=return] files
publickey:     nisplus
```

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv ~]# ping www.google.com
PING www.google.com (142.250.203.132) 56(84) bytes of data.
64 bytes from waw07s06-in-f4.1e100.net (142.250.203.132): icmp_seq=1 ttl=120 time=7.77 ms
64 bytes from waw07s06-in-f4.1e100.net (142.250.203.132): icmp_seq=2 ttl=120 time=8.85 ms
64 bytes from waw07s06-in-f4.1e100.net (142.250.203.132): icmp_seq=3 ttl=120 time=9.76 ms
^C
--- www.google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 7.777/8.799/9.764/0.815 ms
[root@fedora28-srv ~]#
```

Zadanie 9

Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox

Plik Maszyna Widok Wejście Urządzenia Pomoc

```
/etc/ssh/sshd_config [----] 0 L:[ 1+31 32/124] *(772 /3281b) 0080 0x050
#<----->$OpenBSD: sshd_config,v 1.100 2016/08/15 12:32:04 naddy Exp $
```

```
# This is the sshd server system-wide configuration file. See
# sshd_config(5) for more information.
```

```
# This sshd was compiled with PATH=/usr/bin:/bin:/usr/sbin:/sbin
```

```
# The strategy used for options in the default sshd_config shipped with
# OpenSSH is to specify options with their default value where
# possible, but leave them commented. Uncommented options override the
# default value.
```

Port 30

```
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::
```

```
#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key
```

```
# Ciphers and keying
#RekeyLimit default none
```

```
# Logging
#SyslogFacility AUTH
#LogLevel INFO
```

```
# Authentication:
```

```
#LoginGraceTime 2m
```

```
PermitRootLogin no
```

```
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10
```

Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox

Plik Maszyna Widok Wejście Urządzenia Pomoc

```
[root@fedora28-srv ~]# ssh -p 30 root@debian
```

```
root@debian's password:
```

```
Permission denied, please try again.
```

```
root@debian's password:
```

```
[root@fedora28-srv ~]# ssh -p 30 user@debian
```

```
user@debian's password:
```

```
Linux debianstretch 4.9.0-3-amd64 #1 SMP Debian 4.9.30-2+deb9u3 (2017-08-06) x86_64
```

```
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
```

```
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
```

```
Last login: Sun Dec 5 16:20:06 2021 from 172.16.0.20
```

```
user@debianstretch:~$ su root
```

```
Hasło:
```

```
root@debianstretch:/home/user# _
```

Zadanie 10

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv .ssh]# cat known_hosts
debian,172.16.0.10 ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBN97vHzlW
TXeiWfrsgm0005RyZD9TNWnSgrKSxQnOEDM6JW06t/OwAYzB0p1W0+M8xS1vHTa7stgBMszoyKHO3s=
[root@fedora28-srv .ssh]# echo "" > known_hosts
[root@fedora28-srv .ssh]# cat known_hosts

[root@fedora28-srv .ssh]# ssh -p 30 user@debian
The authenticity of host '[debian]:30 ([172.16.0.10]:30)' can't be established.
ECDSA key fingerprint is SHA256:98hIFGTcoDoh1Sir0lylvpP1KogSvqcr+6aSEZxfp24.
ECDSA key fingerprint is MD5:77:e3:6f:d8:3f:26:b0:84:2c:b7:a2:79:4e:06:47:89.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '[debian]:30,[172.16.0.10]:30' (ECDSA) to the list of known hosts.
user@debian's password:
Linux debianstretch 4.9.0-3-amd64 #1 SMP Debian 4.9.30-2+deb9u3 (2017-08-06) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Dec  5 16:33:37 2021 from 172.16.0.20
user@debianstretch:~$ su root
Hasło:
root@debianstretch:/home/user#
```

Zadanie 11

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv .ssh]# cd /home/user
[root@fedora28-srv user]# Radek > dokument.txt
-bash: Radek: nie znaleziono polecenia
[root@fedora28-srv user]# echo Radek > dokument.txt
[root@fedora28-srv user]# cat dokument.txt
Radek
[root@fedora28-srv user]# scp -p 30 dokument.txt user@debian:/home/user
ssh: connect to host debian port 22: Connection refused
lost connection
[root@fedora28-srv user]# scp -P 30 dokument.txt user@debian:/home/user
user@debian's password:
dokument.txt                               100%   6    1.7KB/s   00:00
[root@fedora28-srv user]# _
```

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@debianstretch:/etc/ssh# cat /home/user/dokument.txt
Radek
root@debianstretch:/etc/ssh#
```

Zadanie 12

```
Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[root@fedora28-srv user]# echo "Radosław Terelak 4G" > dokument2.txt
[root@fedora28-srv user]# cat dokument2.txt
Radosław Terelak 4G
[root@fedora28-srv user]#
```

Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox

Plik Maszyna Widok Wejście Urządzenia Pomoc

Lewy	Plik	Polecenie	Opcje	Prawy
Lista plików			zmień	Czas modyfikacji
Szybki widok		C-x q	DRZEŃ	19.11.10:33
Informacje		C-x i	18	15.03.2018
Drzewo			193	15.03.2018
			231	15.03.2018
Tryb wyświetlania...			6	5.12.11:48
Porządek sortowania...			21	5.12.11:44
Filtr...				
Kodowanie...		M-e		
Połączenie FTP...				
Połączenie po powłoce...				
Połączenie SFTP...				
Połączenie SMB...				
Filtruj				
Odśwież		C-r		

Fedora 28_Terelak [Uruchomiona] - Oracle VM VirtualBox

Plik Maszyna Widok Wejście Urządzenia Pomoc

Lewy	Plik	Polecenie	Opcje	Prawy
<- sh://user@debian:30/home/user				<- /home/user
.n	Nazwa	Rozmiar	Czas modyfikacji	.n
..	NADRZEŃ	7.08.2017	19.11.10:33	..
.bash_history		111	5.12.2021	.bash_logout
.bash_logout		220	7.08.2017	.bash_profile
.bashrc		3526	7.08.2017	.bashrc
.profile		675	7.08.2017	dokument.txt
dokument.txt		6	5.12.2021	dokument2.txt

Kopiowanie

Skopiować pliku „dokument2.txt” z maską źródłową:

[x] Wzorce dopasowywania

do:

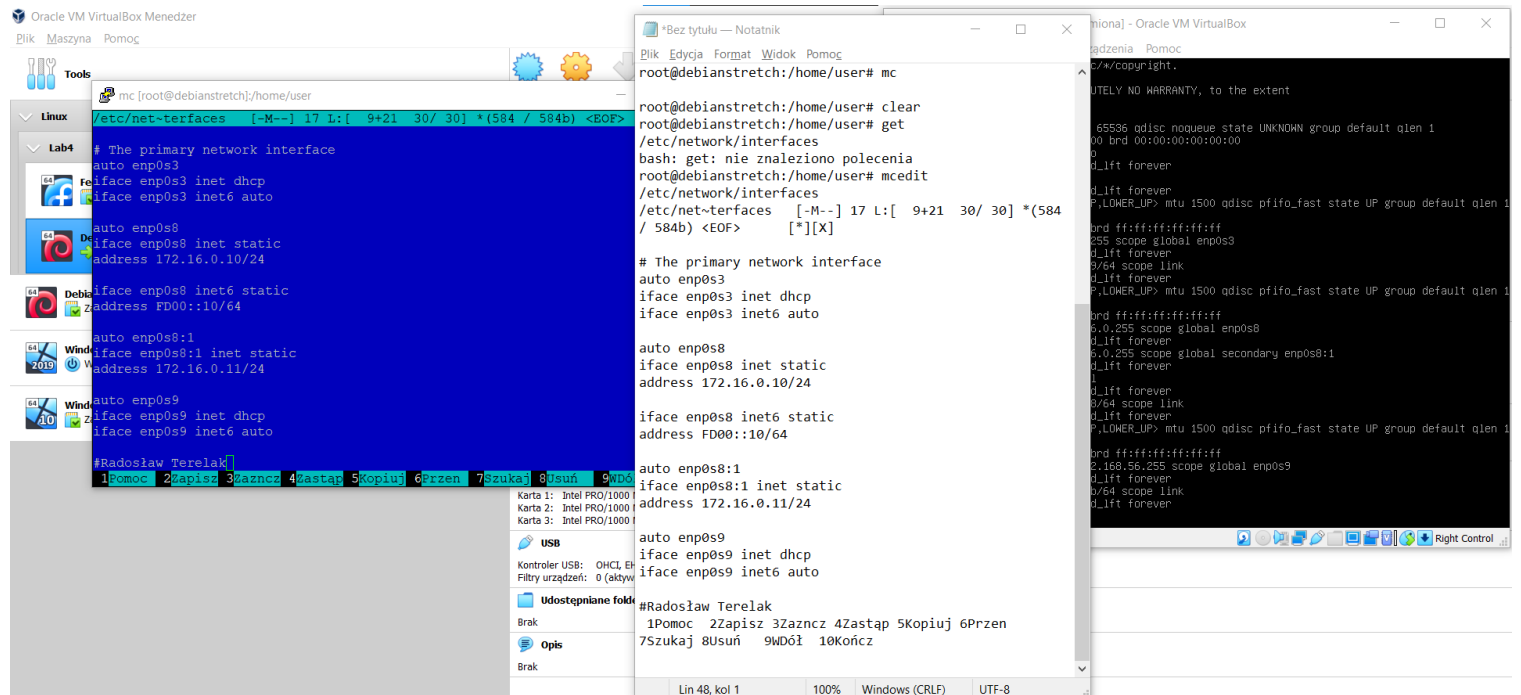
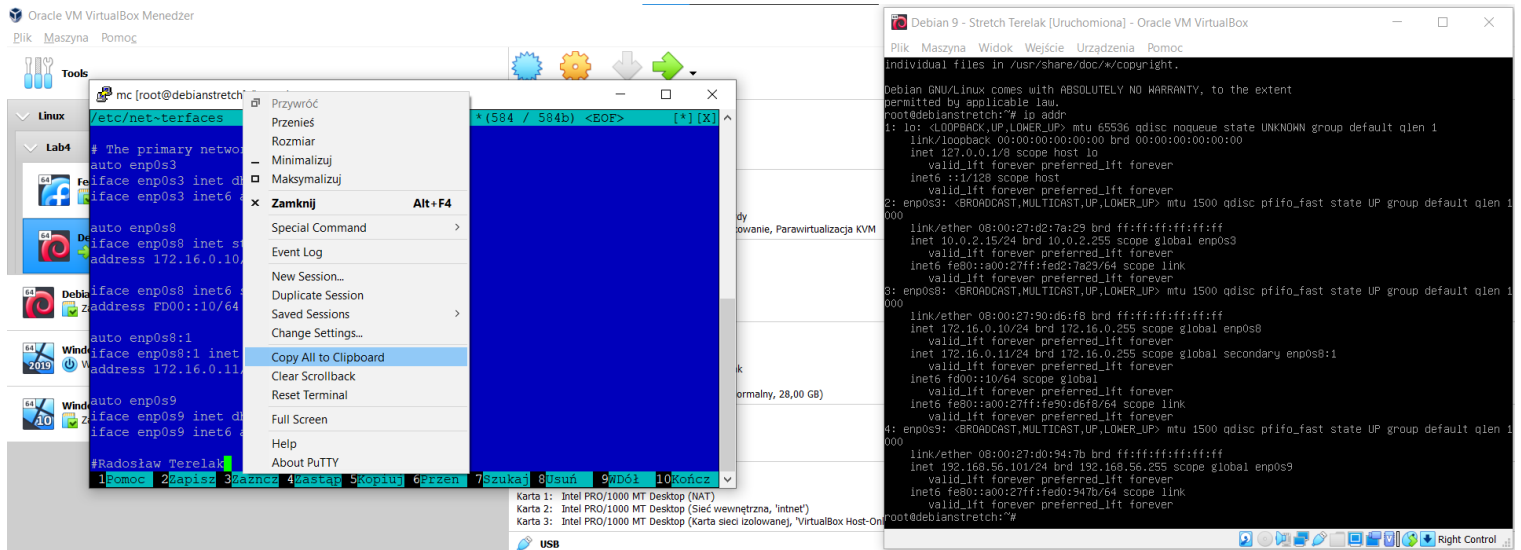
/sh://user@debian:30/home/user/

[] Podążanie za dowiązaniami [] Schodzenie do podkat.
[x] Zachowanie atrybutów [] Zachowanie dowiązań symb.

[< OK >] [W tle] [Anuluj]

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@debianstretch:/etc/ssh# cat /home/user/dokument2.txt
Radosław Terelak 4G
root@debianstretch:/etc/ssh#
```

Zadanie 13



Zadanie 14

netstat -p

```
Debian 9 - Stretch Terelak [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@debianstretch:/etc/ssh#
root@debianstretch:/etc/ssh# netstat -p | head -n 25
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 172.16.0.10:30         fedora:40154           ESTABLISHED 24568/sshd: user [p
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags     Type       State      I-Node  PID/Program name      Path
unix    3      [ ]       DGRAM      -          9026    1/init               /run/systemd/notify
unix    2      [ ]       DGRAM      -          9028    1/init               /run/systemd/cgroups
-agent
unix    8      [ ]       DGRAM      -          9052    1/init               /run/systemd/journal
/socket
unix    9      [ ]       DGRAM      -          9064    1/init               /run/systemd/journal
/dev-log
unix    2      [ ]       DGRAM      -          9070    1/init               /run/systemd/journal
/syslog
unix    2      [ ]       DGRAM      -          43982   24570/systemd         /run/user/1000/syste
md/notify
unix    2      [ ]       DGRAM      -          14046   858/systemd           /run/user/0/systemd/
notify
unix    3      [ ]       DGRAM      -          11988   462/systemd-timesyn   24339/cupsd
unix    3      [ ]       STREAM     CONNECTED  12665   496/systemd-logind    /var/run/dbus/system
_bus_socket
unix    3      [ ]       STREAM     CONNECTED  11898   462/systemd-timesyn   24339/cupsd
unix    3      [ ]       STREAM     CONNECTED  11990   462/systemd-timesyn   1/init
unix    3      [ ]       STREAM     CONNECTED  11899   1/init               /run/systemd/journal
/stdout
unix    2      [ ]       DGRAM      -          12779   499/rsyslogd
unix    3      [ ]       STREAM     CONNECTED  11793   461/rpcbind
unix    2      [ ]       DGRAM      -          43863   24568/sshd: user [p
unix    2      [ ]       DGRAM      -          10124   254/systemd-udev
unix    3      [ ]       STREAM     CONNECTED  14009   1/init               /run/systemd/journal
/stdout
```

netstat -l -s

```
Debian 9 - Stretch Terelak [Uruchomiona] - Ora
Plik Maszyna Widok Wejście Urządzenia Pc
root@debianstretch:/etc/ssh# netstat -l -s
Ip:
  Forwarding: 2
  1872 total packets received
  22 with invalid addresses
  0 forwarded
  0 incoming packets discarded
  1850 incoming packets delivered
  1624 requests sent out
  80 dropped because of missing route
Icmp:
  31 ICMP messages received
  0 input ICMP message failed
  ICMP input histogram:
    destination unreachable: 2
    echo requests: 21
    echo replies: 8
  31 ICMP messages sent
  0 ICMP messages failed
  ICMP output histogram:
    destination unreachable: 2
    echo requests: 8
    echo replies: 21
IcmpMsg:
  InType0: 8
  InType3: 2
root@debianstretch:/etc/ssh#
```