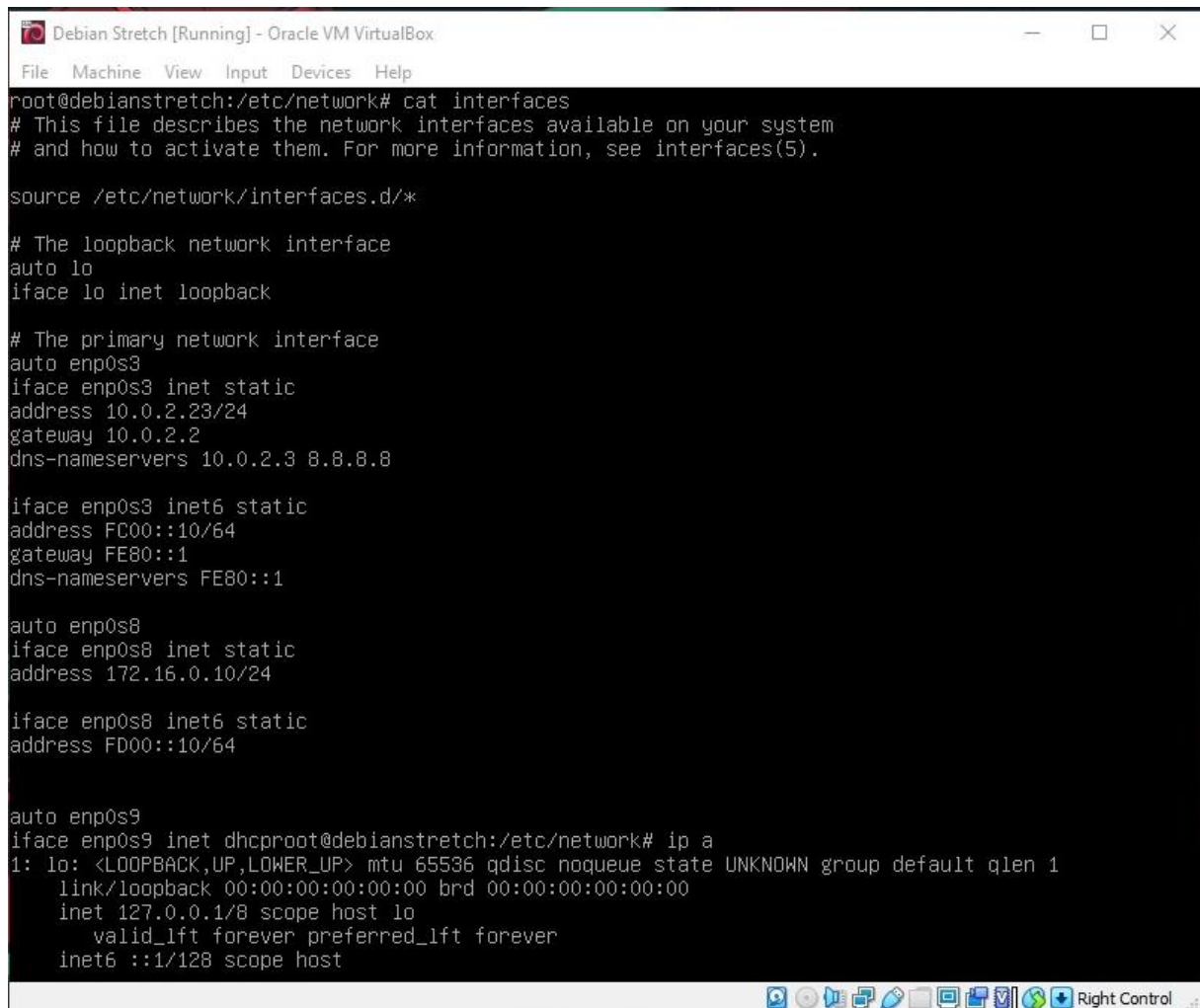


Sprawozdanie z modułu 4 z systemów operacyjnych,
informatyka MS stacjonarnie grupa 3E

Zadanie 1.



```
Debian Stretch [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@debianstretch:/etc/network# cat interfaces
# 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

auto enp0s9
iface enp0s9 inet dhcp
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
```

```
Debian Stretch [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
address FD00::10/64

auto enp0s9
iface enp0s9 inet dhcproot@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
    link/ether 08:00:27:a9:67:23 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.23/24 brd 10.0.2.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fc00::10/64 scope global
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fea9:6723/64 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
    link/ether 08:00:27:9f:db:ea 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:fe9f:dbea/64 scope link
        valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1
    link/ether 08:00:27:40:41:aa brd ff:ff:ff:ff:ff:ff
    inet 192.168.56.101/24 brd 192.168.56.255 scope global enp0s9
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe40:41aa/64 scope link
        valid_lft forever preferred_lft forever
root@debianstretch:/etc/network# _
```

Zadanie 2.

```
Debian Stretch [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@debianstretch:/etc/network# cat interfaces
# 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 enp0s9
iface enp0s9 inet dhcp
root@debianstretch:/etc/network# cat ../resolv.conf
nameserver 192.168.0.1
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
192.168.56.0      0.0.0.0         255.255.255.0   U        0      0      0 enp0s9
root@debianstretch:/etc/network# route -6
Kernel IPv6 routing table
Destination      Next Hop        Flag Met Ref    Use If
fd00::/64        [::]            U    256 0      0 enp0s8
fe80::/64        [::]            U    256 0      0 enp0s3
```

```
Kernel IPv6 routing table
Destination      Next Hop        Flag Met Ref    Use If
fd00::/64        [::]            U    256 0      0 enp0s8
fe80::/64        [::]            U    256 0      0 enp0s3
fe80::/64        [::]            U    256 0      0 enp0s8
fe80::/64        [::]            U    256 0      0 enp0s9
[::]/0           [::]            !n   -1 1     113 lo
localhost/128    [::]            Un   0  2     24 lo
fd00::10/128     [::]            Un   0  1      0 lo
fe80::a00:27ff:fe40:41aa/128 [::]            Un   0  1      0 lo
fe80::a00:27ff:fe9f:dbea/128 [::]            Un   0  1      0 lo
fe80::a00:27ff:fea9:6723/128 [::]            Un   0  1      0 lo
ff00::/8         [::]            U    256 1     14 enp0s3
ff00::/8         [::]            U    256 1     14 enp0s8
ff00::/8         [::]            U    256 1     14 enp0s9
[::]/0           [::]            !n   -1 1     113 lo
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 1000
    link/ether 08:00:27:a9:67:23 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:fea9:6723/64 scope link
```

```
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1
000
    link/ether 08:00:27:a9:67:23 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:fea9:6723/64 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 08:00:27:9f:db:ea 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:fe9f:dbea/64 scope link
        valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1
000
    link/ether 08:00:27:40:41:aa brd ff:ff:ff:ff:ff:ff
    inet 192.168.56.101/24 brd 192.168.56.255 scope global enp0s9
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe40:41aa/64 scope link
        valid_lft forever preferred_lft forever
root@debianstretch:/etc/network# ip a
```

Zadanie 3.

```
Debian Stretch [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@debianstretch:/etc/network# cat interfaces | tail -n 7 | head -n 5
auto enp0s8:2
iface enp0s8:2 inet static
address 172.16.0.11/24

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:a9:67:23 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:fea9:6723/64 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 08:00:27:9f:db:ea 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 enp0s8:2
        valid_lft forever preferred_lft forever
    inet6 fd00::10/64 scope global
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe9f:dbea/64 scope link
        valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1
000
    link/ether 08:00:27:40:41:aa brd ff:ff:ff:ff:ff:ff
    inet 192.168.56.101/24 brd 192.168.56.255 scope global enp0s9
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe40:41aa/64 scope link
```

Zadanie 4.


```
Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
[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
auto disabled link-local manual shared
[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/10)
[root@fedora28-srv ~]# nmcli connection reload
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv6.addresses FC00::20/64
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv6.method
auto dhcp ignore link-local manual shared
[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/13)
[root@fedora28-srv ~]# nmcli connection reload
[root@fedora28-srv ~]# nmcli device connect
enp0s3 enp0s8 help lo
[root@fedora28-srv ~]# nmcli device connect enp0s8
^C Błąd: nmcli zostało zakończone sygnałem Interrupt (2)
[root@fedora28-srv ~]# nmcli connection show
NAME                                UUID                                TYPE    DEVICE
enp0s3                             4eb23d96-4568-3ddb-bc52-f16517277965 ethernet enp0s3
Połączenie przewodowe 1 58455340-6d8a-3e3f-93a6-1bf3d4265509 ethernet --
[root@fedora28-srv ~]# cat /etc/resolv.conf
# Generated by NetworkManager
nameserver 10.0.2.3
nameserver fe80::1%enp0s3
[root@fedora28-srv ~]#
```

```
Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

enp0s3 4eb23d96-4568-3ddb-bc52-f16517277965 ethernet enp0s3
[root@fedora28-srv ~]# nmcli device modify
enp0s3 enp0s8 help lo
[root@fedora28-srv ~]# nmcli device modify
enp0s3 enp0s8 help lo
[root@fedora28-srv ~]# nmcli device modify enp0s3
Display all 169 possibilities? (y or n)
[root@fedora28-srv ~]# nmcli connection modify
enp0s3 path uuid
help Połączenie\ przewodowe\ 1
id --temporary
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1
Display all 169 possibilities? (y or n)
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 ipv4.
ipv4.addresses ipv4.dns ipv4.may-fail
ipv4.dad-timeout ipv4.dns-options ipv4.method
ipv4.dhcp-client-id ipv4.dns-priority ipv4.never-default
ipv4.dhcp-fqdn ipv4.dns-search ipv4.route-metric
ipv4.dhcp-hostname ipv4.gateway ipv4.routes
ipv4.dhcp-send-hostname ipv4.ignore-auto-dns ipv4.route-table
ipv4.dhcp-timeout ipv4.ignore-auto-routes
[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.method manual
Błąd: zmodyfikowanie połączenia „Połączenie przewodowe 1” się nie powiodło: ipv6.addresses: ta właściwość nie może być pusta dla „method=manual”
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 ipv6.addresses FE80::20/64
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1 ipv6.method manual
[root@fedora28-srv ~]# nmcli connection up
enp0s3 id Połączenie\ przewodowe\ 1
help path uuid
[root@fedora28-srv ~]# nmcli connection up Połączenie\ przewodowe\ 1
Pomyślnie aktywowano połączenie (ścieżka aktywacji D-Bus: /org/freedesktop/NetworkManager/ActiveConnection/28)
[root@fedora28-srv ~]# nmcli connection reload
[root@fedora28-srv ~]#
```

```
Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

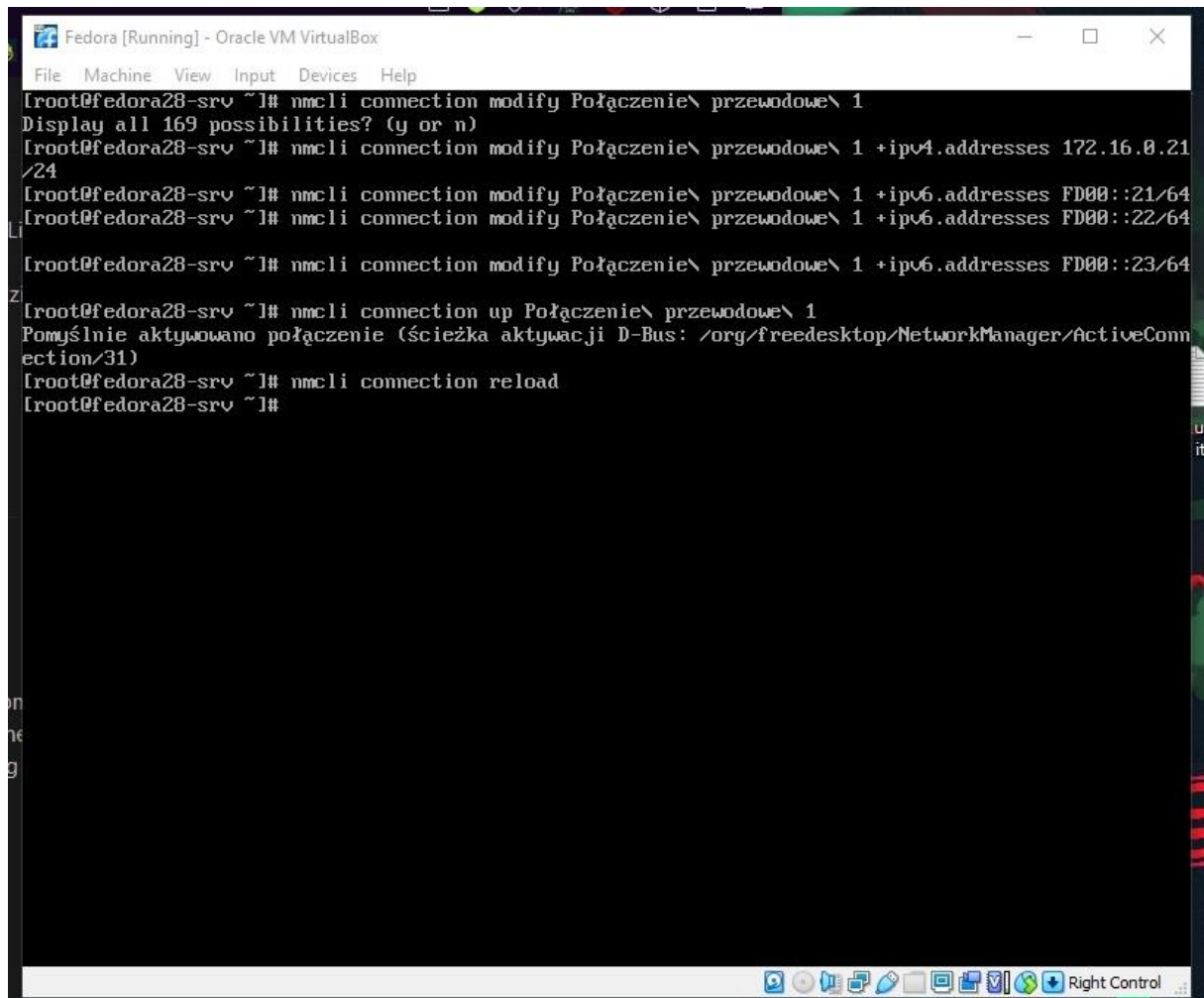
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv4.d
ipv4.dad-timeout ipv4.dhcp-send-hostname ipv4.dns-priority
ipv4.dhcp-client-id ipv4.dhcp-timeout ipv4.dns-search
ipv4.dhcp-fqdn ipv4.dns
ipv4.dhcp-hostname ipv4.dns-options
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv4.dns 10.0.2.3
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv6.dns FE80::1
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv6.gateway FE80::1
[root@fedora28-srv ~]#
```

```
Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
[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=0.575 ms
64 bytes from 172.16.0.10: icmp_seq=2 ttl=64 time=0.667 ms
64 bytes from 172.16.0.10: icmp_seq=3 ttl=64 time=1.03 ms
64 bytes from 172.16.0.10: icmp_seq=4 ttl=64 time=1.07 ms
64 bytes from 172.16.0.10: icmp_seq=5 ttl=64 time=0.680 ms
^C
--- 172.16.0.10 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4023ms
rtt min/avg/max/mdev = 0.575/0.805/1.071/0.208 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=0.600 ms
64 bytes from 172.16.0.11: icmp_seq=2 ttl=64 time=1.86 ms
64 bytes from 172.16.0.11: icmp_seq=3 ttl=64 time=0.938 ms
^C
--- 172.16.0.11 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2015ms
rtt min/avg/max/mdev = 0.600/1.133/1.861/0.532 ms
[root@fedora28-srv ~]# _
```

Zadanie 5.

```
Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
[root@fedora28-srv ~]# nmcli connection modify enp0s3 ipv4.method
auto disabled link-local manual shared
[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/30)
[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 08:00:27:02:38:29 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 86378sec preferred_lft 86378sec
    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 noprefixroute
        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 08:00:27:6a:2b:8e 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::9ded:c1c4:c02d:bbb/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 104
10.0.2.0/24 dev enp0s3 proto kernel scope link src 10.0.2.15 metric 104
10.0.2.0/24 dev enp0s3 proto kernel scope link src 10.0.2.25 metric 104
[root@fedora28-srv ~]# cat /etc/resolv.conf
# Generated by NetworkManager
nameserver 192.168.0.1
nameserver 10.0.2.3
nameserver fe80::1%enp0s3
[root@fedora28-srv ~]# _
```

Zadanie 6.



The image shows a terminal window titled "Fedora [Running] - Oracle VM VirtualBox". The terminal displays a series of commands and their outputs for configuring a network connection named "Połączenie\ przewodowe\ 1".

```
File Machine View Input Devices Help
[root@fedora28-srv ~]# nmcli connection modify Połączenie\ przewodowe\ 1
Display all 169 possibilities? (y or n)
[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/31)
[root@fedora28-srv ~]# nmcli connection reload
[root@fedora28-srv ~]#
```

The terminal window includes a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". At the bottom, there is a taskbar with various icons and a "Right Control" button.

```
Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
-bash: ipa: nie znaleziono polecenia
[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 08:00:27:02:38:29 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 85500sec preferred_lft 85500sec
    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 noprefixroute
        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 08:00:27:6a:2b:8e 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::9ded:c1c4:c02d:bbb/64 scope link
        valid_lft forever preferred_lft forever
[root@fedora28-srv ~]# _
```

```
Debian Stretch [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

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=0.560 ms
64 bytes from 172.16.0.21: icmp_seq=2 ttl=64 time=0.757 ms
^C
--- 172.16.0.21 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1023ms
rtt min/avg/max/mdev = 0.560/0.658/0.757/0.101 ms
root@debianstretch:/etc/network# ping6 FD00::21 -c 2
ping: FD00::21: Ta nazwa lub usługa jest nieznana
root@debianstretch:/etc/network# ping6 FD00::21 -c 2
PING FD00::21(fd00::21) 56 data bytes
64 bytes from fd00::21: icmp_seq=1 ttl=64 time=0.631 ms
64 bytes from fd00::21: icmp_seq=2 ttl=64 time=1.08 ms

--- FD00::21 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1005ms
rtt min/avg/max/mdev = 0.631/0.858/1.086/0.229 ms
root@debianstretch:/etc/network# ping6 FD00::22 -c 2
PING FD00::22(fd00::22) 56 data bytes
64 bytes from fd00::22: icmp_seq=1 ttl=64 time=0.657 ms
64 bytes from fd00::22: icmp_seq=2 ttl=64 time=1.01 ms

--- FD00::22 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1010ms
rtt min/avg/max/mdev = 0.657/0.836/1.015/0.179 ms
root@debianstretch:/etc/network# ping6 FD00::23 -c 2
PING FD00::23(fd00::23) 56 data bytes
64 bytes from fd00::23: icmp_seq=1 ttl=64 time=0.633 ms
64 bytes from fd00::23: icmp_seq=2 ttl=64 time=1.01 ms

--- FD00::23 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1022ms
rtt min/avg/max/mdev = 0.633/0.825/1.018/0.194 ms
root@debianstretch:/etc/network#
```

Zadanie 7.

```
Debian Stretch [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

root@debianstretch:/etc# cat /etc/hosts
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
root@debianstretch:/etc# 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=0.321 ms
64 bytes from fedora (172.16.0.20): icmp_seq=2 ttl=64 time=0.977 ms
^C
--- fedora ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1013ms
rtt min/avg/max/mdev = 0.321/0.649/0.977/0.328 ms
root@debianstretch:/etc# ping fedora6
PING fedora6(fd00::20) 56 data bytes
64 bytes from fedora6 (fd00::20): icmp_seq=1 ttl=64 time=0.348 ms
64 bytes from fedora6 (fd00::20): icmp_seq=2 ttl=64 time=1.28 ms
^C
--- fedora6 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1014ms
rtt min/avg/max/mdev = 0.348/0.818/1.289/0.471 ms
root@debianstretch:/etc# ping www.google.com
PING www.google.com (172.16.0.1) 56(84) bytes of data.
64 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.020 ms
64 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.038 ms
^C
--- www.google.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1031ms
rtt min/avg/max/mdev = 0.020/0.029/0.038/0.009 ms
root@debianstretch:/etc# _

Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

[root@fedora28-srv ~]# cat /etc/hosts
host.conf hostname hosts hosts.allow hosts.deny
root@fedora28-srv ~]# cat /etc/hosts
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
172.16.0.18 debian
FD00::18 debian
root@fedora28-srv ~]# ping debian
PING debian (172.16.0.18) 56(84) bytes of data.
64 bytes from debian (172.16.0.18): icmp_seq=1 ttl=64 time=0.332 ms
64 bytes from debian (172.16.0.18): icmp_seq=2 ttl=64 time=0.691 ms
^C
--- debian ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1014ms
rtt min/avg/max/mdev = 0.332/0.511/0.691/0.188 ms
root@fedora28-srv ~]# ping debian6
PING debian6(fd00::18) 56 data bytes
64 bytes from debian6 (fd00::18): icmp_seq=1 ttl=64 time=0.630 ms
64 bytes from debian6 (fd00::18): icmp_seq=2 ttl=64 time=1.26 ms
^C
--- debian6 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1014ms
rtt min/avg/max/mdev = 0.630/0.949/1.260/0.319 ms
root@fedora28-srv ~]# ping www.google.com
PING www.google.com (1.1.1.1) 56(84) bytes of data.
64 bytes from www.google.com (1.1.1.1): icmp_seq=1 ttl=53 time=24.4 ms
64 bytes from www.google.com (1.1.1.1): icmp_seq=2 ttl=53 time=16.6 ms
^C
--- www.google.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 16.661/20.573/24.486/3.915 ms
root@fedora28-srv ~]# _
```

Zadanie 8.

```
Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
[root@fedora28-srv etc]# cat nsswitch.conf | tail -n 5
hosts:      dns files myhostname

aliases:    files nisplus
bootparams: nisplus [NOTFOUND=return] files
publickey:  nisplus
[root@fedora28-srv etc]# cat hosts | tail -n 2
FD00::10 debian6
1.1.1.1 www.google.com
[root@fedora28-srv etc]# ping www.google.com
PING www.google.com (216.58.208.196) 56(84) bytes of data.
64 bytes from waw07s02-in-f4.1e100.net (216.58.208.196): icmp_seq=1 ttl=118 time=15.8 ms
64 bytes from waw07s02-in-f4.1e100.net (216.58.208.196): icmp_seq=2 ttl=118 time=17.2 ms
^C
--- www.google.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1000ms
rtt min/avg/max/mdev = 15.833/16.564/17.295/0.731 ms
[root@fedora28-srv etc]#
```

Zadanie 9.

```
Debian Stretch [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@debianstretch:/etc/ssh# cat sshd_config | grep -i rootlogin
PermitRootLogin no
# the setting of "PermitRootLogin without-password".
root@debianstretch:/etc/ssh# cat sshd_config | grep -i port
Port 22
#OpenSSH Ports no
root@debianstretch:/etc/ssh# _

Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
[root@fedora28-srv etc]# ssh user@debian
ssh: connect to host debian port 22: Connection refused
[root@fedora28-srv etc]# ssh -p 30 root@debian
root@debian's password:
Permission denied, please try again.
root@debian's password:

[root@fedora28-srv etc]# 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: Sat Dec 5 18:33:15 2020 from 172.16.0.20
user@debianstretch:~$ su
Has to:
root@debianstretch:~/home/user#
```

Zadanie 10.


```
Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
[root@fedora28-srv .ssh]# ls
known_hosts
[root@fedora28-srv .ssh]# cat known_hosts
172.16.0.10 ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBN97vHzlWTXe iWfr
sgm0005RyZD9TNWnSgrKSxQn0EDM6JW06t/OwAYzB0p1W0+MBxS1vHTa7stgBMszoYKH03s=
debian ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBN97vHzlWTXe iWfrsgm00
05RyZD9TNWnSgrKSxQn0EDM6JW06t/OwAYzB0p1W0+MBxS1vHTa7stgBMszoYKH03s=
[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 SHA256:98hIFGTcoDoH1Sir0lylvpP1KqQSwgr+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:
Permission denied, please try again.
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: Sat Dec 5 18:38:36 2020 from 172.16.0.20
user@debianstretch:~$ su
Haslo:
root@debianstretch:/home/user#
```

Zadanie 11.

```
Debian Stretch [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@debianstretch:/home/user# ls
dokument.txt
root@debianstretch:/home/user# _

Fedora [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
[root@fedora28-srv user]# touch dokument.txt
[root@fedora28-srv user]# ls
dokument.txt
[root@fedora28-srv user]# pwd
/home/user
[root@fedora28-srv user]# scp -P 30 dokument.txt user@debian:/home/user
user@debian's password:
dokument.txt
[root@fedora28-srv user]# file dokument.txt
dokument.txt: empty
[root@fedora28-srv user]#
```

Zadanie 12.

Menu Lewy -> Połączenie po powłoce -> user@debian:30/home/user

Fedora [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Lewy	Plik	Polecenie	Opcje	Prawy			
<- sh://user@debian:30/home/user		- [^]>		<- /home/user			
.n	Nazwa	Rozmiar	Czas modyf i	.n	Nazwa	Rozmiar	Czas modyf i
/..		NADRZĘD	7.08.2017	/..		NADRZĘD	1.05.2018
.bash_history		242	7.12.10#44	.bash_logout		18	15.03.2018
.bash_logout		220	7.08.2017	.bash_profile		193	15.03.2018
.bashrc		3526	7.08.2017	.bashrc		231	15.03.2018
.profile		675	7.08.2017	dokument.txt		0	7.12.10#45
dokument.txt		0	7.12.10#45	dokument2.txt		0	7.12.10#50

.bash_history

NADRZĘD

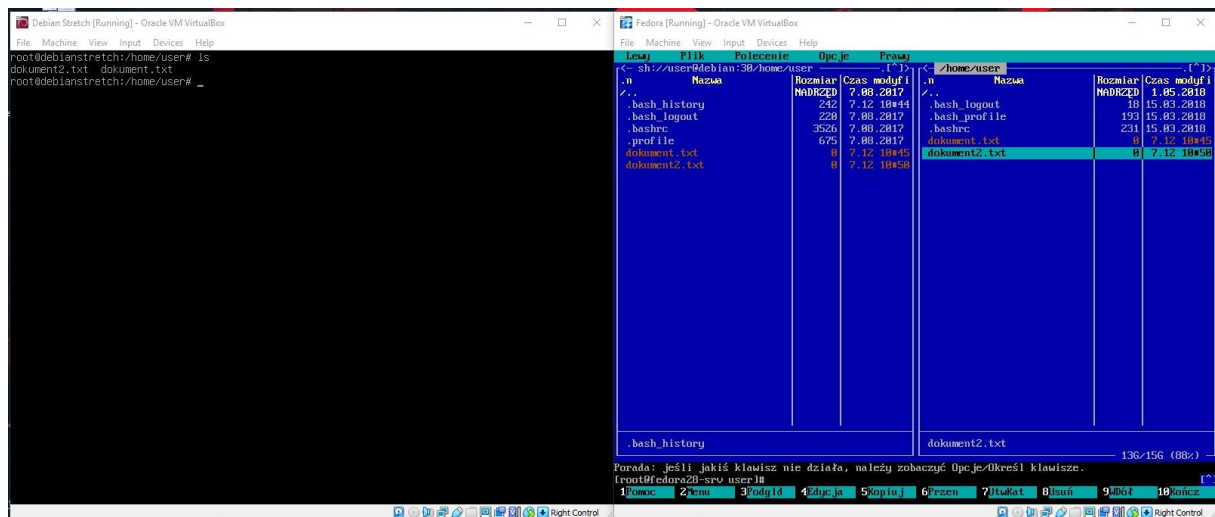
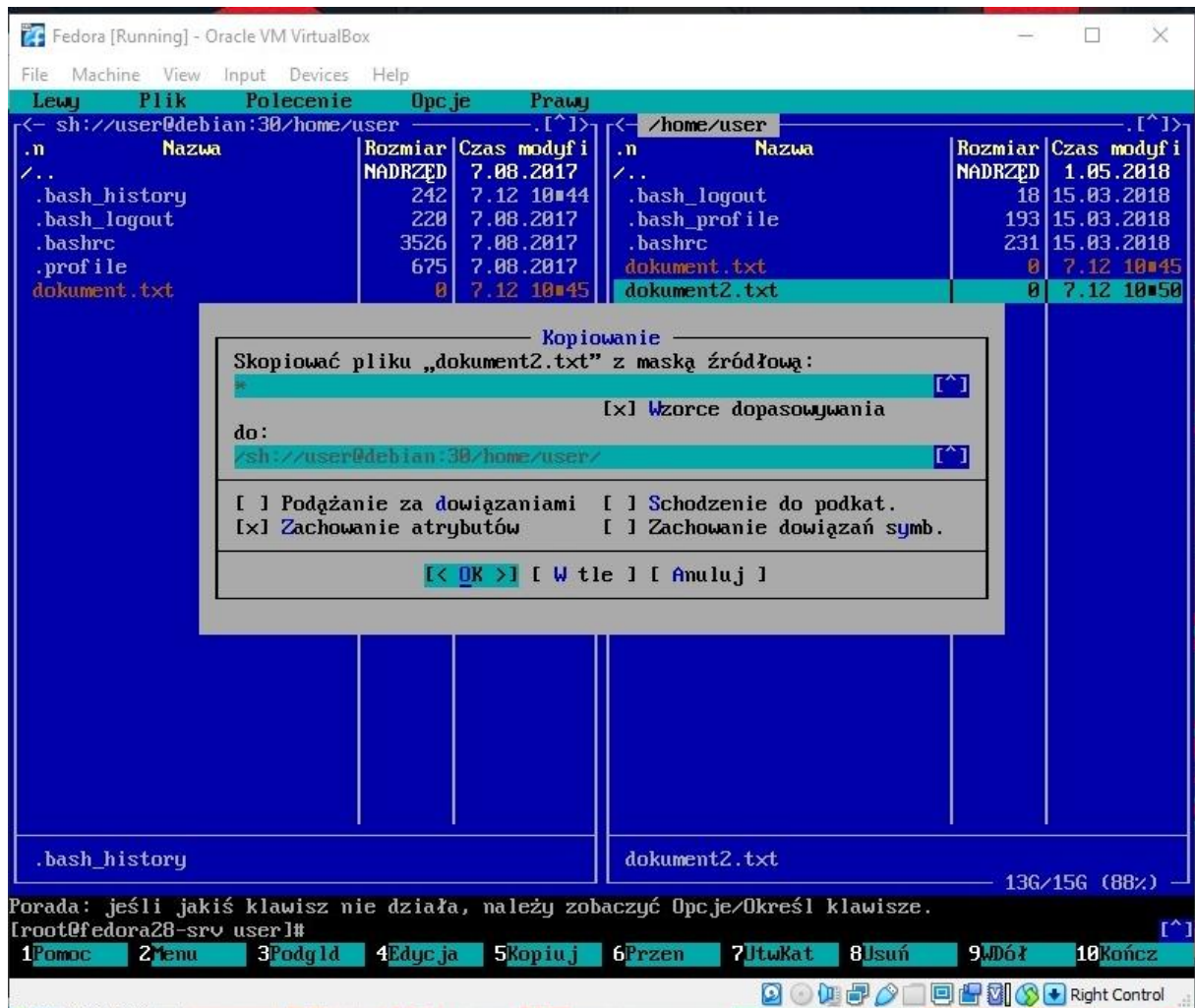
136/156 (88%)

Porada: jeśli jakiś klawisz nie działa, należy zobaczyć Opcje/Określ klawisze.

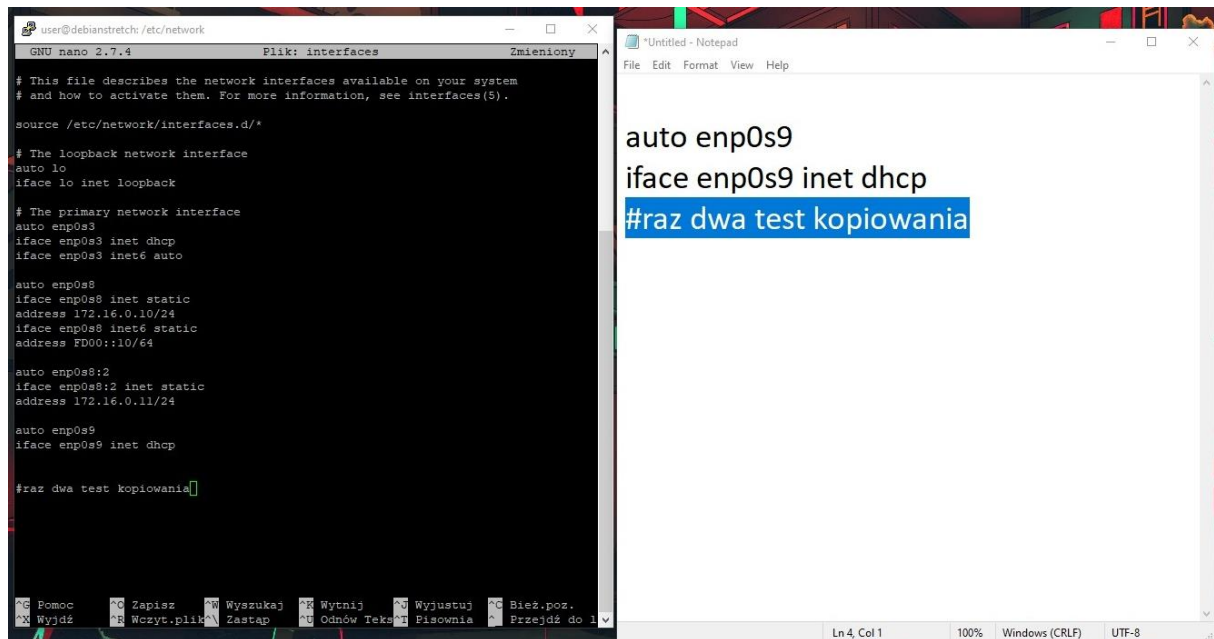
[root@fedora28-srv user]#

1Pomoc 2Menu 3Podgląd 4Edycja 5Kopiuuj 6Przen 7Utwórz 8Usuń 9Wdół 10Kończ

Right Control

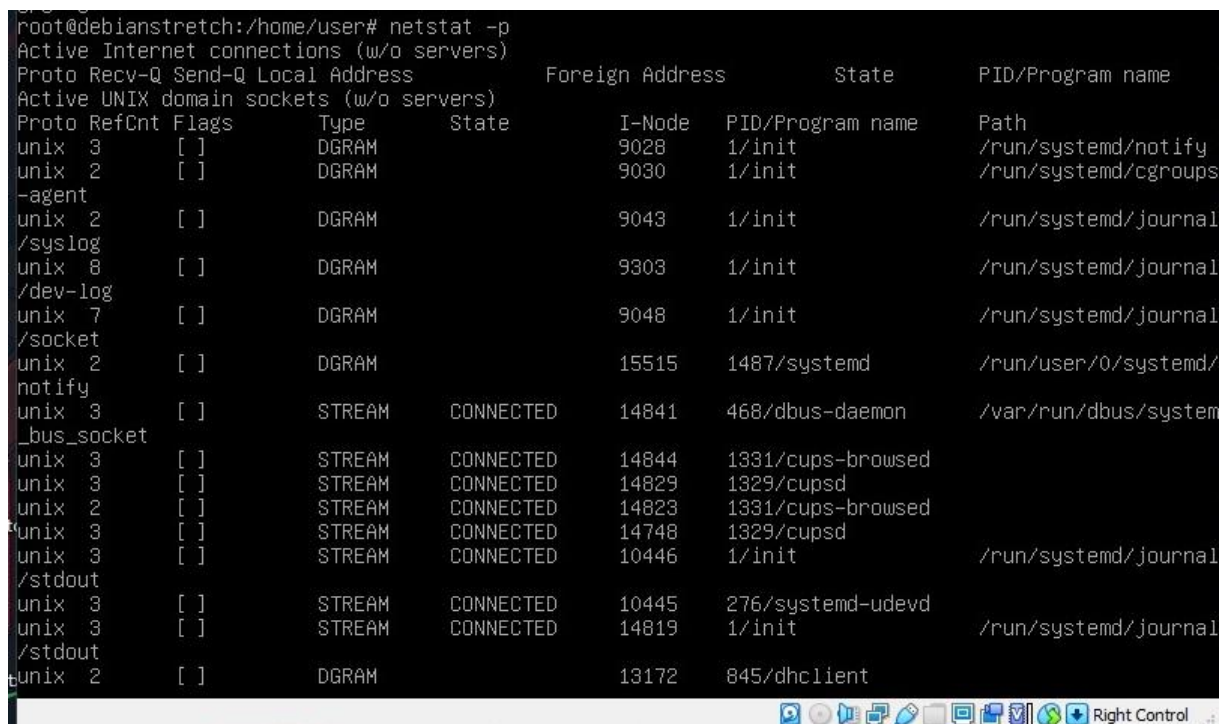


Zadanie 13.



Zadanie 14.

Użyłem polecenia netstat z przełącznikami -l -s lub -p




```
Debian Stretch [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@debianstretch:/home/user# netstat -s
Ip:
  Forwarding: 2
  1380 total packets received
  2 with invalid addresses
  0 forwarded
  0 incoming packets discarded
  1378 incoming packets delivered
  984 requests sent out
  40 dropped because of missing route
Icmp:
  4 ICMP messages received
  0 input ICMP message failed
  ICMP input histogram:
    echo requests: 4
  4 ICMP messages sent
  0 ICMP messages failed
  ICMP output histogram:
    echo replies: 4
IcmpMsg:
  InType8: 4
  OutType0: 4
Tcp:
  0 active connection openings
  4 passive connection openings
  0 failed connection attempts
  0 connection resets received
  0 connections established
  1154 segments received
  781 segments sent out
  0 segments retransmitted
  0 bad segments received
  10 resets sent
Udp:
  204 packets received
  0 packets to unknown port received
  0 packet receive errors
```

```
Debian Stretch [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@debianstretch:/home/user# netstat -l
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 0.0.0.0:sunrpc           0.0.0.0:*              LISTEN
tcp        0      0 localhost:ipp            0.0.0.0:*              LISTEN
tcp        0      0 localhost:smtp           0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:30              0.0.0.0:*              LISTEN
tcp6       0      0 [::]:sunrpc              [::]:*                 LISTEN
tcp6       0      0 localhost:ipp            [::]:*                 LISTEN
tcp6       0      0 localhost:smtp           [::]:*                 LISTEN
tcp6       0      0 [::]:30                  [::]:*                 LISTEN
udp        0      0 0.0.0.0:asf-rmcp        0.0.0.0:*              LISTEN
udp        0      0 0.0.0.0:sunrpc           0.0.0.0:*              LISTEN
udp        0      0 0.0.0.0:ipp             0.0.0.0:*              LISTEN
udp        0      0 0.0.0.0:mdns             0.0.0.0:*              LISTEN
udp        0      0 0.0.0.0:43052           0.0.0.0:*              LISTEN
udp        0      0 0.0.0.0:bootpc          0.0.0.0:*              LISTEN
udp        0      0 0.0.0.0:bootpc          0.0.0.0:*              LISTEN
udp6       0      0 [::]:asf-rmcp           [::]:*                 LISTEN
udp6       0      0 [::]:sunrpc              [::]:*                 LISTEN
udp6       0      0 [::]:mdns                [::]:*                 LISTEN
udp6       0      0 [::]:52992               [::]:*                 LISTEN
Active UNIX domain sockets (only servers)
Proto RefCnt Flags       Type       State       I-Node     Path
unix   2      [ ACC ] STREAM    LISTENING   9034       /run/systemd/private
unix   2      [ ACC ] STREAM    LISTENING   9039       /run/lvm/lvmpolld.socket
unix   2      [ ACC ] STREAM    LISTENING  14678      /var/run/cups/cups.sock
unix   2      [ ACC ] STREAM    LISTENING   9046       /run/systemd/journal/stdout
unix   2      [ ACC ] STREAM    LISTENING   9050       /run/systemd/fsck.progress
unix   2      [ ACC ] STREAM    LISTENING   9054       /run/rpcbind.sock
unix   2      [ ACC ] SEQPACKET LISTENING   9314       /run/udev/control
unix   2      [ ACC ] STREAM    LISTENING   9070       /run/lvm/lvmetad.socket
unix   2      [ ACC ] STREAM    LISTENING  11897      /var/run/avahi-daemon/socket
unix   2      [ ACC ] STREAM    LISTENING  11900      /var/run/dbus/system_bus_socket
unix   2      [ ACC ] STREAM    LISTENING  15519      /run/user/0/systemd/private
unix   2      [ ACC ] STREAM    LISTENING  15524      /run/user/0/gnupg/S.gpg-agent.ssh
unix   2      [ ACC ] STREAM    LISTENING  15527      /run/user/0/gnupg/S.gpg-agent.browser
```