

## Network Engineering 2019 Exercises - Unit 3

### 0.1 Netmask Calculation

**What is the netmask for this network?**

0.0.0.0/1

Put your answer on a single line in `unit3/answers.txt`, with 0: at the beginning of the line, e.g., 0:255.255.255.0

**What is the netmask for this network?**

30.249.16.80/30

Put your answer on a single line in `unit3/answers.txt`, with 1: at the beginning of the line, e.g., 1:255.255.255.0

**What is the netmask for this network?**

48.0.0.0/4

Put your answer on a single line in `unit3/answers.txt`, with 2: at the beginning of the line, e.g., 2:255.255.255.0

**What is the netmask for this network?**

109.128.0.0/10

Put your answer on a single line in `unit3/answers.txt`, with 3: at the beginning of the line, e.g., 3:255.255.255.0

**What is the netmask for this network?**

0.0.0.0/0

Put your answer on a single line in `unit3/answers.txt`, with 4: at the beginning of the line, e.g., 4:255.255.255.0

**What is the netmask for this network?**

4.8.0.0/16

Put your answer on a single line in `unit3/answers.txt`, with 5: at the beginning of the line, e.g., 5:255.255.255.0

**What is the netmask for this network?**

10.167.210.0/23

Put your answer on a single line in `unit3/answers.txt`, with 6: at the beginning of the line, e.g., 6:255.255.255.0

**What is the netmask for this network?**

116.0.0.0/6

Put your answer on a single line in `unit3/answers.txt`, with 7: at the beginning of the line, e.g., 7:255.255.255.0

**What is the netmask for this network?**

74.98.156.0/22

Put your answer on a single line in `unit3/answers.txt`, with 8: at the beginning of the line, e.g., 8:255.255.255.0

**What is the netmask for this network?**

40.0.0.0/7

Put your answer on a single line in `unit3/answers.txt`, with 9: at the beginning of the line, e.g., 9:255.255.255.0

**What is the netmask for this network?**

0.0.0.0/4

Put your answer on a single line in `unit3/answers.txt`, with 10: at the beginning of the line, e.g., 10:255.255.255.0

**What is the netmask for this network?**

64.0.0.0/2

Put your answer on a single line in `unit3/answers.txt`, with 11: at the beginning of the line, e.g., 11:255.255.255.0

**What is the netmask for this network?**

46.0.0.0/8

Put your answer on a single line in `unit3/answers.txt`, with 12: at the beginning of the line, e.g., 12:255.255.255.0

**What is the netmask for this network?**

0.0.0.0/2

Put your answer on a single line in `unit3/answers.txt`, with 13: at the beginning of the line, e.g., 13:255.255.255.0

**What is the netmask for this network?**

109.172.130.232/29

Put your answer on a single line in `unit3/answers.txt`, with 14: at the beginning of the line, e.g., 14:255.255.255.0

**What is the netmask for this network?**

32.0.0.0/3

Put your answer on a single line in `unit3/answers.txt`, with 15: at the beginning of the line, e.g., 15:255.255.255.0

**What is the netmask for this network?**

0.0.0.0/0

Put your answer on a single line in `unit3/answers.txt`, with 16: at the beginning of the line, e.g., 16:255.255.255.0

**What is the netmask for this network?**

0.0.0.0/5

Put your answer on a single line in `unit3/answers.txt`, with 17: at the beginning of the line, e.g., 17:255.255.255.0

**What is the netmask for this network?**

48.0.0.0/6

Put your answer on a single line in `unit3/answers.txt`, with 18: at the beginning of the line, e.g., 18:255.255.255.0

**What is the netmask for this network?**

0.0.0.0/1

Put your answer on a single line in `unit3/answers.txt`, with 19: at the beginning of the line, e.g., 19:255.255.255.0

**What is the netmask for this network?**

118.48.0.0/12

Put your answer on a single line in `unit3/answers.txt`, with 20: at the beginning of the line, e.g., 20:255.255.255.0

**What is the netmask for this network?**

92.0.0.0/6

Put your answer on a single line in `unit3/answers.txt`, with 21: at the beginning of the line, e.g., `21:255.255.255.0`

**What is the netmask for this network?**

13.0.0.0/10

Put your answer on a single line in `unit3/answers.txt`, with 22: at the beginning of the line, e.g., `22:255.255.255.0`

**What is the netmask for this network?**

70.34.0.0/16

Put your answer on a single line in `unit3/answers.txt`, with 23: at the beginning of the line, e.g., `23:255.255.255.0`

**What is the netmask for this network?**

76.128.0.0/11

Put your answer on a single line in `unit3/answers.txt`, with 24: at the beginning of the line, e.g., `24:255.255.255.0`

**What is the netmask for this network?**

26.216.0.0/13

Put your answer on a single line in `unit3/answers.txt`, with 25: at the beginning of the line, e.g., `25:255.255.255.0`

**What is the netmask for this network?**

72.0.0.0/6

Put your answer on a single line in `unit3/answers.txt`, with 26: at the beginning of the line, e.g., `26:255.255.255.0`

**What is the netmask for this network?**

11.193.64.0/18

Put your answer on a single line in `unit3/answers.txt`, with 27: at the beginning of the line, e.g., `27:255.255.255.0`

**What is the netmask for this network?**

79.0.0.0/8

Put your answer on a single line in `unit3/answers.txt`, with 28: at the beginning of the line, e.g., `28:255.255.255.0`

**What is the netmask for this network?**

23.36.64.192/26

Put your answer on a single line in `unit3/answers.txt`, with 29: at the beginning of the line, e.g., `29:255.255.255.0`

**What is the netmask for this network?**

0.0.0.0/1

Put your answer on a single line in `unit3/answers.txt`, with 30: at the beginning of the line, e.g., `30:255.255.255.0`

**What is the netmask for this network?**

0.0.0.0/4

Put your answer on a single line in `unit3/answers.txt`, with 31: at the beginning of the line, e.g., `31:255.255.255.0`

**What is the netmask for this network?**

12.126.144.64/31

Put your answer on a single line in `unit3/answers.txt`, with 32: at the beginning of the line, e.g., `32:255.255.255.0`

**What is the netmask for this network?**

104.0.0.0/5

Put your answer on a single line in `unit3/answers.txt`, with 33: at the beginning of the line, e.g., `33:255.255.255.0`

**What is the netmask for this network?**

2.220.188.0/24

Put your answer on a single line in `unit3/answers.txt`, with 34: at the beginning of the line, e.g., `34:255.255.255.0`

**What is the netmask for this network?**

103.144.0.0/12

Put your answer on a single line in `unit3/answers.txt`, with 35: at the beginning of the line, e.g., 35:255.255.255.0

**What is the netmask for this network?**

102.96.232.0/24

Put your answer on a single line in `unit3/answers.txt`, with 36: at the beginning of the line, e.g., 36:255.255.255.0

**What is the netmask for this network?**

120.0.0.0/7

Put your answer on a single line in `unit3/answers.txt`, with 37: at the beginning of the line, e.g., 37:255.255.255.0

**What is the netmask for this network?**

28.205.209.192/30

Put your answer on a single line in `unit3/answers.txt`, with 38: at the beginning of the line, e.g., 38:255.255.255.0

**What is the netmask for this network?**

64.0.0.0/3

Put your answer on a single line in `unit3/answers.txt`, with 39: at the beginning of the line, e.g., 39:255.255.255.0

## **0.2 Variable Length Sub-net Masking**

**What is the VLSM name of the network corresponding to the following?**

47.233.192.138 netmask 255.254.0.0

Put your answer on a single line in `unit3/answers.txt`, with 40: at the beginning of the line, e.g., 40:10.0.0.0/8

**What is the VLSM name of the network corresponding to the following?**

67.191.114.80 netmask 255.255.255.128

Put your answer on a single line in `unit3/answers.txt`, with 41: at the beginning of the line, e.g., 41:10.0.0.0/8

**What is the VLSM name of the network corresponding to the following?**

100.84.60.149 netmask 0.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 42: at the beginning of the line, e.g., `42:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

114.221.124.11 netmask 240.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 43: at the beginning of the line, e.g., `43:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

106.231.226.200 netmask 255.255.255.254

Put your answer on a single line in `unit3/answers.txt`, with 44: at the beginning of the line, e.g., `44:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

112.32.230.222 netmask 255.252.0.0

Put your answer on a single line in `unit3/answers.txt`, with 45: at the beginning of the line, e.g., `45:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

76.86.157.65 netmask 255.255.255.240

Put your answer on a single line in `unit3/answers.txt`, with 46: at the beginning of the line, e.g., `46:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

6.0.101.178 netmask 192.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 47: at the beginning of the line, e.g., `47:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

10.247.12.28 netmask 255.255.255.224

Put your answer on a single line in `unit3/answers.txt`, with 48: at the beginning of the line, e.g., `48:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

22.164.62.232 netmask 192.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 49: at the beginning of the line, e.g., `49:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

25.46.7.83 netmask 255.252.0.0

Put your answer on a single line in `unit3/answers.txt`, with 50: at the beginning of the line, e.g., `50:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

6.234.70.238 netmask 255.255.255.0

Put your answer on a single line in `unit3/answers.txt`, with 51: at the beginning of the line, e.g., `51:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

69.8.153.230 netmask 128.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 52: at the beginning of the line, e.g., `52:10.0.0.0/8`

**What is the VLSM name of the network corresponding to the following?**

114.245.83.31 netmask 255.128.0.0

Put your answer on a single line in `unit3/answers.txt`, with 53: at the beginning of the line, e.g., `53:10.0.0.0/8`



**What is the VLSM name of the network corresponding to the following?**

64.253.104.63 netmask 255.255.254.0

Put your answer on a single line in `unit3/answers.txt`, with 54: at the beginning of the line, e.g., 54:10.0.0.0/8

**What is the VLSM name of the network corresponding to the following?**

75.58.168.76 netmask 255.128.0.0

Put your answer on a single line in `unit3/answers.txt`, with 55: at the beginning of the line, e.g., 55:10.0.0.0/8

**What is the VLSM name of the network corresponding to the following?**

35.107.111.7 netmask 255.255.255.240

Put your answer on a single line in `unit3/answers.txt`, with 56: at the beginning of the line, e.g., 56:10.0.0.0/8

**What is the VLSM name of the network corresponding to the following?**

106.227.30.3 netmask 255.255.255.240

Put your answer on a single line in `unit3/answers.txt`, with 57: at the beginning of the line, e.g., 57:10.0.0.0/8

**What is the VLSM name of the network corresponding to the following?**

94.122.205.28 netmask 255.252.0.0

Put your answer on a single line in `unit3/answers.txt`, with 58: at the beginning of the line, e.g., 58:10.0.0.0/8

**What is the VLSM name of the network corresponding to the following?**

59.35.251.224 netmask 248.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 59: at the beginning of the line, e.g., 59:10.0.0.0/8

### 0.3 Configure Network Interfaces using the ifconfig and ip commands

What is the ifconfig command to setup interface eth0 with the following network settings (apply any options in the order listed)?

103.194.86.238 netmask 255.255.255.254

Put your answer on a single line in unit3/answers.txt, with 60: at the beginning of the line, e.g., 60:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast

What is the ifconfig command to setup interface eth0 with the following network settings (apply any options in the order listed)?

35.146.96.153 netmask 255.255.255.128, PPP remote address 69.238.213.168

Put your answer on a single line in unit3/answers.txt, with 61: at the beginning of the line, e.g., 61:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast

What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?

ifconfig eth0 75.38.198.2 netmask 224.0.0.0 down txqueuelen 3159

Put your answer on a single line in unit3/answers.txt, with 62: at the beginning of the line, e.g., 62:ip blah blah; ip again with other options; ip again with yet other options

What is the ifconfig command to setup interface eth0 with the following network settings (apply any options in the order listed)?

74.186.108.161 netmask 255.255.128.0, but not running

Put your answer on a single line in unit3/answers.txt, with 63: at the beginning of the line, e.g., 63:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast

What is ifconfig command equivalent to the following ip command sequence (apply any options in the order listed)?

ip address add 101.201.164.121/11 dev eth0; ip link set dev eth0  
promisc on

Put your answer on a single line in unit3/answers.txt, with 64: at the beginning of the line, e.g., 64:ip blah blah; ip again with other options; ip again with yet other options

**What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?**

`ifconfig eth0 40.120.236.131 netmask 255.255.255.128`

Put your answer on a single line in `unit3/answers.txt`, with 65: at the beginning of the line, e.g., `65:ip blah blah; ip again with other options; ip again with yet other options`

**What is the ifconfig command to setup interface eth0 with the following network settings (apply any options in the order listed)?**

`88.131.200.53 netmask 255.255.255.128`

Put your answer on a single line in `unit3/answers.txt`, with 66: at the beginning of the line, e.g., `66:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast`

**What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?**

`105.168.221.34 netmask 255.128.0.0`

Put your answer on a single line in `unit3/answers.txt`, with 67: at the beginning of the line, e.g., `67:ip blah blah; ip again with other options; ip again with yet other options`

**What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?**

`74.16.141.135 netmask 255.0.0.0, without ARP`

Put your answer on a single line in `unit3/answers.txt`, with 68: at the beginning of the line, e.g., `68:ip blah blah; ip again with other options; ip again with yet other options`

**What is ifconfig command equivalent to the following ip command sequence (apply any options in the order listed)?**

`ip address add 82.32.247.115/1 dev eth0; ip link set dev eth0 arp off`

Put your answer on a single line in `unit3/answers.txt`, with 69: at the beginning of the line, e.g., `69:ip blah blah; ip again with other options; ip again with yet other options`

**What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?**

```
ifconfig eth0 42.4.216.3 netmask 255.255.240.0
```

Put your answer on a single line in `unit3/answers.txt`, with 70: at the beginning of the line, e.g., 70:ip blah blah; ip again with other options; ip again with yet other options

**What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?**

```
15.19.45.170 netmask 255.255.255.252
```

Put your answer on a single line in `unit3/answers.txt`, with 71: at the beginning of the line, e.g., 71:ip blah blah; ip again with other options; ip again with yet other options

**What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?**

```
ifconfig eth0 19.194.245.19 netmask 248.0.0.0 down
```

Put your answer on a single line in `unit3/answers.txt`, with 72: at the beginning of the line, e.g., 72:ip blah blah; ip again with other options; ip again with yet other options

**What is the ifconfig command to setup interface eth0 with the following network settings (apply any options in the order listed)?**

```
7.197.77.91 netmask 255.255.255.128, MTU = 3218, but not running,  
without ARP
```

Put your answer on a single line in `unit3/answers.txt`, with 73: at the beginning of the line, e.g., 73:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast

**What is the ifconfig command to setup interface eth0 with the following network settings (apply any options in the order listed)?**

```
48.147.219.108 netmask 255.255.255.0, TX queue length = 2593
```

Put your answer on a single line in `unit3/answers.txt`, with 74: at the beginning of the line, e.g., 74:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast

**What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?**

```
ifconfig eth0 40.240.73.76 netmask 255.252.0.0 down -arp txqueuelen
1303
```

Put your answer on a single line in `unit3/answers.txt`, with 75: at the beginning of the line, e.g., `75:ip blah blah; ip again with other options; ip again with yet other options`

**What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?**

```
ifconfig eth0 19.131.49.62 netmask 255.255.255.252 down txqueuelen
3350
```

Put your answer on a single line in `unit3/answers.txt`, with 76: at the beginning of the line, e.g., `76:ip blah blah; ip again with other options; ip again with yet other options`

**What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?**

```
ifconfig eth0 6.39.75.24 netmask 255.252.0.0
```

Put your answer on a single line in `unit3/answers.txt`, with 77: at the beginning of the line, e.g., `77:ip blah blah; ip again with other options; ip again with yet other options`

**What is the ifconfig command to setup interface eth0 with the following network settings (apply any options in the order listed)?**

```
5.76.28.199 netmask 255.255.254.0
```

Put your answer on a single line in `unit3/answers.txt`, with 78: at the beginning of the line, e.g., `78:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast`

**What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?**

```
50.126.22.169 netmask 255.255.252.0, but not running, TX queue
length = 2425
```

Put your answer on a single line in `unit3/answers.txt`, with 79: at the beginning of the line, e.g., `79:ip blah blah; ip again with other options; ip again with yet other options`

## 0.4 Configure Network Interfaces using `/etc/network/interfaces` file

### 0.4.1 Prepare `unit3/iface0-solution.txt`

Produce an `interfaces` file in `unit3/iface0-solution.txt`, that contains the following:

- A template called `wealth0`, that specifies an MTU of 4339 and MAC address `75:56:C9:37:3B:AB`.
- A template called `ruins1`, that specifies an MTU of 3382 and MAC address `89:98:92:B3:8D:D5`.
- An interface named `ftdi0`, with IPv4 settings configured by DHCP.
- An interface named `ftdi1`, with IPv4 settings configured by DHCP.
- An interface named `jam2`, with IPv4 settings configured by DHCP.
- An interface named `ftdi3`, with IPv4 address `47.113.149.98` and netmask `255.255.224.0`, and inherits the template `wealth0`.
- An interface named `eth4`, with IPv4 address `100.124.131.214` and netmask `255.255.255.240`, and inherits the template `wealth0`.
- An interface named `jam5`, with IPv4 settings configured by DHCP, and inherits the template `ruins1`.
- An interface named `wlan6`, with IPv4 address `119.181.74.178` and netmask `255.255.192.0`.

### 0.4.2 Prepare `unit3/iface1-solution.txt`

Produce an `interfaces` file in `unit3/iface1-solution.txt`, that contains the following:

- A template called `ruins0`, that specifies an MTU of 7504 and MAC address `81:81:DF:80:15:41`.
- A template called `moths1`, that specifies an MTU of 8588 and MAC address `6C:9E:26:43:1B:06`.
- A template called `castle2`, that specifies an MTU of 6932 and MAC address `79:B5:D2:C0:F5:58`.
- A template called `wealth3`, that specifies an MTU of 7224 and MAC address `6A:3D:37:F0:1D:AC`.
- A template called `wealth4`, that specifies an MTU of 8442 and MAC address `2E:8B:1E:43:CC:12`.

- An interface named wlan0, with IPv4 address 10.109.44.56 and netmask 255.255.0.0, and inherits the template moths1.
- An interface named wlan1, with IPv4 address 19.21.15.30 and netmask 255.255.255.224.
- An interface named ftdi2, with IPv4 address 35.61.170.169 and netmask 255.0.0.0.

#### 0.4.3 Prepare unit3/iface2-solution.txt

Produce an `interfaces` file in `unit3/iface2-solution.txt`, that contains the following:

- A template called moths0, that specifies an MTU of 8699 and MAC address 80:14:54:2C:B2:82.
- A template called moths1, that specifies an MTU of 2013 and MAC address C5:83:E3:09:BB:93.
- An interface named ftdi0, with IPv4 address 24.182.143.55 and netmask 255.255.255.254.
- An interface named eth1, with IPv4 address 77.97.40.203 and netmask 255.0.0.0.
- An interface named wlan2, with IPv4 settings configured by DHCP, and inherits the template moths0.

#### 0.4.4 Prepare unit3/iface3-solution.txt

Produce an `interfaces` file in `unit3/iface3-solution.txt`, that contains the following:

- A template called ruins0, that specifies an MTU of 8376 and MAC address 8A:EC:DE:41:BD:A4.
- A template called wealth1, that specifies an MTU of 516 and MAC address AD:80:33:1F:B7:92.
- A template called castle2, that specifies an MTU of 4744 and MAC address ED:CD:34:15:42:24.
- A template called wealth3, that specifies an MTU of 3205 and MAC address 85:42:96:8E:A1:D0.
- An interface named wlan0, with IPv4 address 119.214.121.43 and netmask 255.255.255.240, and inherits the template wealth1.
- An interface named ftdi1, with IPv4 address 99.112.127.49 and netmask 255.255.255.128.
- An interface named jam2, with IPv4 address 115.69.174.57 and netmask 255.0.0.0.

#### 0.4.5 Prepare unit3/iface4-solution.txt

Produce an `interfaces` file in `unit3/iface4-solution.txt`, that contains the following:

- A template called `ruins0`, that specifies an MTU of 2908 and MAC address `E1:4B:CD:45:BC:52`.
- A template called `wealth1`, that specifies an MTU of 5219 and MAC address `E0:29:23:CB:54:DF`.
- An interface named `wlan0`, with IPv4 address `76.186.32.193` and netmask `255.255.255.0`, and inherits the template `wealth1`.
- An interface named `eth1`, with IPv4 address `13.192.48.164` and netmask `255.255.255.248`.
- An interface named `eth2`, with IPv4 address `114.37.81.144` and netmask `128.0.0.0`.
- An interface named `jam3`, with IPv4 address `102.147.185.74` and netmask `240.0.0.0`, and inherits the template `wealth1`.
- An interface named `ftdi4`, with IPv4 settings configured by DHCP, and inherits the template `wealth1`.
- An interface named `wlan5`, with IPv4 settings configured by DHCP.
- An interface named `jam6`, with IPv4 address `34.128.91.138` and netmask `255.128.0.0`.

### 0.5 Create and delete routes

**0.5.1 Create files `unit3/routes0add.sh` and `unit3/routes0del.sh` that contains commands that will respectively establish and delete the following routes**

- `48.67.230.0/25` via the IP address of your 2nd VM
- `53.60.10.128/27` via the interface to your 2nd VM
- `23.83.128.0/18` via the interface to your 2nd VM
- `32.65.160.0/19` via the IP address of your 2nd VM
- `54.197.154.0/23` via the IP address of your 2nd VM
- `106.117.8.0/22` via the interface to your 2nd VM



**0.5.2 Create files `unit3/routes1add.sh` and `unit3/routes1del.sh` that contains commands that will respective establish and delete the following routes**

- 43.228.128.0/18 via the IP address of your 2nd VM
- 33.124.159.0/24 via the interface to your 2nd VM
- 86.184.160.0/19 via the interface to your 2nd VM
- 40.209.33.8/30 via the IP address of your 2nd VM
- 63.219.192.0/23 via the IP address of your 2nd VM
- 48.78.176.0/21 via the IP address of your 2nd VM

**0.5.3 Create files `unit3/routes2add.sh` and `unit3/routes2del.sh` that contains commands that will respective establish and delete the following routes**

- 66.107.120.0/21 via the interface to your 2nd VM
- 32.190.0.0/16 via the IP address of your 2nd VM
- 114.56.200.12/30 via the IP address of your 2nd VM
- 75.25.64.0/19 via the interface to your 2nd VM
- 92.132.250.128/25 via the IP address of your 2nd VM
- 88.18.109.76/31 via the IP address of your 2nd VM

**0.5.4 Create files `unit3/routes3add.sh` and `unit3/routes3del.sh` that contains commands that will respective establish and delete the following routes**

- 69.94.0.0/18 via the interface to your 2nd VM
- 55.150.128.0/17 via the IP address of your 2nd VM
- 51.150.27.64/26 via the IP address of your 2nd VM
- 24.198.130.0/24 via the interface to your 2nd VM
- 22.254.32.0/20 via the IP address of your 2nd VM
- 50.183.247.0/24 via the interface to your 2nd VM

**0.5.5 Create files `unit3/routes4add.sh` and `unit3/routes4del.sh` that contains commands that will respective establish and delete the following routes**

- 88.182.0.0/16 via the interface to your 2nd VM
- 122.72.125.0/25 via the interface to your 2nd VM
- 29.105.160.0/20 via the interface to your 2nd VM
- 94.187.0.0/16 via the IP address of your 2nd VM
- 22.109.137.204/30 via the IP address of your 2nd VM
- 117.135.44.0/24 via the IP address of your 2nd VM