

## Network Engineering 2019 Exercises - Unit 3

### 0.1 Netmask Calculation

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

63.43.161.192/30

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?**

12.248.3.160/27

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?**

85.213.136.0/21

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?**

72.0.0.0/7

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?**

112.0.0.0/4

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?**

37.192.0.0/10

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?**

24.82.112.164/30

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?**

58.0.0.0/7

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?**

33.128.0.0/10

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?**

67.80.0.0/13

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?**

80.128.0.0/10

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?**

101.58.200.0/21

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?**

98.106.243.92/31

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?**

96.0.0.0/3

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?**

77.0.0.0/8

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?**

90.33.56.254/31

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?**

110.0.0.0/10

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?**

16.198.228.216/29

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?**

46.108.0.0/14

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?**

65.184.96.160/28

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?**

0.0.0.0/1

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?**

121.47.194.0/23

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?**

119.106.0.0/16

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?**

48.171.128.0/18

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?**

75.246.212.58/31

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?**

33.129.42.0/24

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?**

78.90.163.64/26

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?**

0.0.0.0/6

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?**

103.166.83.128/26

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?**

38.121.96.0/21

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?**

106.0.0.0/7

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?**

65.128.0.0/9

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?**

103.178.0.0/15

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?**

29.235.0.0/16

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?**

43.128.0.0/11

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?**

57.134.0.0/15

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?**

71.48.0.0/19

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?**

16.208.0.0/12

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?**

100.0.0.0/6

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?**

87.145.142.216/29

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?**

53.137.214.37 netmask 255.255.255.252

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?**

79.42.107.246 netmask 255.254.0.0

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?**

127.206.176.184 netmask 240.0.0.0

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?**

52.170.16.85 netmask 255.255.128.0

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?**

80.12.101.254 netmask 255.255.255.252

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?**

28.117.65.102 netmask 128.0.0.0

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?**

91.190.19.101 netmask 255.255.255.224

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?**

22.17.100.170 netmask 255.255.252.0

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?**

48.71.182.43 netmask 255.255.0.0

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?**

89.146.218.7 netmask 255.0.0.0

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?**

19.160.9.156 netmask 255.255.240.0

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?**

109.238.89.152 netmask 255.128.0.0

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?**

69.207.69.199 netmask 255.255.255.254

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?**

25.106.67.53 netmask 255.224.0.0

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?**

64.89.243.101 netmask 255.255.240.0

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?**

94.237.16.8 netmask 255.192.0.0

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?**

106.14.139.146 netmask 255.255.255.252

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?**

121.200.67.26 netmask 255.192.0.0

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?**

0.90.127.98 netmask 255.254.0.0

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?**

81.82.64.187 netmask 128.0.0.0

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

9.149.200.206 netmask 128.0.0.0, without ARP, TX queue length = 3920

Put your answer on a single line in `unit3/answers.txt`, with 60: at the beginning of the line, e.g., 60:`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)?

87.231.55.240 netmask 255.255.255.0, PPP remote address 68.237.110.161, TX queue length = 1823

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 122.225.159.55 netmask 255.255.255.248 promisc`

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)?

44.177.254.142 netmask 224.0.0.0, MTU = 2070, PPP remote address 20.90.10.144, but not running, without ARP

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

82.150.28.98 netmask 128.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 64: at the beginning of the line, e.g., 64:`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 28.11.248.102 netmask 255.240.0.0 -arp
```

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

```
ip address add 43.33.13.103/12 dev eth0
```

Put your answer on a single line in `unit3/answers.txt`, with 66: at the beginning of the line, e.g., `66: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)?**

```
28.43.179.232 netmask 255.255.254.0, MTU = 2433, in promiscuous mode
```

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

```
ip address add 16.188.60.142/20 dev eth0; ip link set eth0 down; ip link set dev eth0 promisc on
```

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

```
ifconfig eth0 35.51.213.254 netmask 255.255.255.240 down -arp
```

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

```
ip address add 28.163.121.12/17 dev eth0
```

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

```
ifconfig eth0 52.242.87.85 netmask 255.192.0.0 down txqueuelen 842
```

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

```
60.232.255.133 netmask 255.255.240.0, but not running, without ARP,  
in promiscuous mode, TX queue length = 2788
```

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)?**

```
52.55.214.47 netmask 255.252.0.0, but not running
```

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

```
ifconfig eth0 82.132.112.140 netmask 255.255.255.0
```

Put your answer on a single line in `unit3/answers.txt`, with 74: at the beginning of the line, e.g., 74: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 6.125.15.188/5 dev eth0; ip link set dev eth0 promisc
on
```

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

```
81.244.157.172 netmask 192.0.0.0, in promiscuous mode
```

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 17.77.98.70 netmask 255.255.255.240 txqueuelen 2597
```

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)?**

```
72.131.43.143 netmask 128.0.0.0, in promiscuous mode, TX queue
length = 1577
```

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

```
ip address add 101.1.147.169/24 dev eth0; ip link set dev eth0 txqueue-
len 1731
```

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 `ruins0`, that specifies an MTU of 1004 and MAC address `B5:D8:15:2C:2B:75`.
- A template called `castle1`, that specifies an MTU of 2954 and MAC address `04:DF:F7:50:45:6D`.
- A template called `wealth2`, that specifies an MTU of 3453 and MAC address `62:2D:0F:FA:2A:DA`.
- A template called `ruins3`, that specifies an MTU of 3129 and MAC address `F7:71:9C:07:E7:D1`.
- An interface named `eth0`, with IPv4 address `107.230.201.156` and netmask `255.128.0.0`, and inherits the template `castle1`.
- An interface named `wlan1`, with IPv4 settings configured by DHCP.
- An interface named `jam2`, with IPv4 settings configured by DHCP and inherits the template `castle1`.

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

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

- A template called `wealth0`, that specifies an MTU of 4211 and MAC address `65:5A:70:12:52:E1`.
- A template called `castle1`, that specifies an MTU of 6585 and MAC address `C9:7F:AC:65:29:14`.
- A template called `castle2`, that specifies an MTU of 3006 and MAC address `F1:15:49:D2:DB:8B`.
- A template called `wealth3`, that specifies an MTU of 6939 and MAC address `3A:12:58:4B:4D:D8`.
- A template called `castle4`, that specifies an MTU of 6782 and MAC address `32:C6:C4:84:A7:72`.
- An interface named `wlan0`, with IPv4 settings configured by DHCP.
- An interface named `eth1`, with IPv4 settings configured by DHCP.

- An interface named wlan2, with IPv4 settings configured by DHCP and inherits the template castle2.
- An interface named eth3, with IPv4 address 19.22.113.38 and netmask 255.255.254.0.
- An interface named ftdi4, with IPv4 address 65.29.167.12 and netmask 254.0.0.0, and inherits the template wealth0.
- An interface named eth5, with IPv4 address 85.240.78.195 and netmask 255.255.248.0, and inherits the template wealth0.
- An interface named eth6, with IPv4 settings configured by DHCP.

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

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

- A template called castle0, that specifies an MTU of 2646 and MAC address 32:B7:8F:1E:1C:6C.
- A template called ruins1, that specifies an MTU of 3007 and MAC address A0:B6:57:AD:7E:CD.
- An interface named jam0, with IPv4 settings configured by DHCP and inherits the template castle0.
- An interface named jam1, with IPv4 address 61.171.49.230 and netmask 255.255.128.0, and inherits the template ruins1.
- An interface named wlan2, with IPv4 address 90.120.199.225 and netmask 255.255.255.128, and inherits the template ruins1.
- An interface named wlan3, with IPv4 address 104.112.28.11 and netmask 255.192.0.0, and inherits the template ruins1.
- An interface named eth4, with IPv4 settings configured by DHCP and inherits the template castle0.
- An interface named wlan5, with IPv4 settings configured by DHCP and inherits the template ruins1.
- An interface named ftdi6, with IPv4 address 22.25.103.176 and netmask 255.255.248.0, and inherits the template ruins1.

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

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

- A template called `wealth0`, that specifies an MTU of 3628 and MAC address `08:94:20:59:9F:4A`.
- A template called `castle1`, that specifies an MTU of 8034 and MAC address `B9:C7:2D:DE:20:F2`.
- A template called `castle2`, that specifies an MTU of 2298 and MAC address `A2:31:73:02:20:54`.
- A template called `moths3`, that specifies an MTU of 7730 and MAC address `86:DE:2D:C1:4D:45`.
- An interface named `ftdi0`, with IPv4 settings configured by DHCP.
- An interface named `ftdi1`, with IPv4 address `32.152.161.64` and netmask `255.255.240.0`.
- An interface named `eth2`, with IPv4 settings configured by DHCP and inherits the template `castle2`.
- An interface named `wlan3`, with IPv4 address `10.190.214.80` and netmask `255.192.0.0`, and inherits the template `castle2`.
- An interface named `eth4`, with IPv4 settings configured by DHCP.
- An interface named `jam5`, with IPv4 settings configured by DHCP.
- An interface named `eth6`, with IPv4 address `42.170.220.237` and netmask `255.255.255.252`.

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

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

- A template called `wealth0`, that specifies an MTU of 1939 and MAC address `E5:B0:8E:41:5E:E8`.
- A template called `moths1`, that specifies an MTU of 1970 and MAC address `72:F8:01:1D:62:07`.
- A template called `castle2`, that specifies an MTU of 6275 and MAC address `EC:8C:05:1D:A0:8D`.
- An interface named `eth0`, with IPv4 settings configured by DHCP and inherits the template `wealth0`.



- An interface named ftdi1, with IPv4 settings configured by DHCP.
- An interface named ftdi2, with IPv4 settings configured by DHCP and inherits the template moths1.
- An interface named ftdi3, with IPv4 address 90.228.92.131 and netmask 240.0.0.0.
- An interface named eth4, with IPv4 address 85.213.212.69 and netmask 255.255.255.0, and inherits the template moths1.
- An interface named wlan5, with IPv4 settings configured by DHCP and inherits the template moths1.
- An interface named jam6, with IPv4 address 111.97.84.241 and netmask 255.255.255.252.

## 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

- 121.181.192.0/19 via the interface to your 2nd VM
- 16.104.88.0/24 via the IP address of your 2nd VM
- 126.210.104.0/21 via the IP address of your 2nd VM
- 19.28.0.0/16 via the interface to your 2nd VM
- 71.210.128.0/18 via the interface to your 2nd VM
- 93.88.33.0/24 via the interface to your 2nd VM

### 0.5.2 Create files unit3/routes1add.sh and unit3/routes1del.sh that contains commands that will respectively establish and delete the following routes

- 63.46.144.0/20 via the interface to your 2nd VM
- 24.53.24.0/21 via the interface to your 2nd VM
- 56.211.21.0/24 via the interface to your 2nd VM
- 101.167.208.0/20 via the interface to your 2nd VM
- 66.133.128.0/18 via the interface to your 2nd VM
- 117.137.201.224/28 via the interface to 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**

- 65.23.209.48/29 via the IP address of your 2nd VM
- 20.143.128.0/20 via the interface to your 2nd VM
- 11.75.202.16/28 via the interface to your 2nd VM
- 111.195.59.26/31 via the interface to your 2nd VM
- 40.167.130.128/25 via the IP address of your 2nd VM
- 37.186.203.0/25 via the interface to 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**

- 27.68.144.0/21 via the interface to your 2nd VM
- 80.94.192.0/18 via the interface to your 2nd VM
- 60.50.76.24/31 via the IP address of your 2nd VM
- 61.171.166.128/26 via the interface to your 2nd VM
- 123.62.159.184/29 via the IP address of your 2nd VM
- 104.78.128.0/17 via the IP address of 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**

- 37.194.108.2/31 via the interface to your 2nd VM
- 97.244.184.28/30 via the interface to your 2nd VM
- 122.45.140.0/22 via the interface to your 2nd VM
- 78.168.75.64/26 via the IP address of your 2nd VM
- 12.83.240.0/20 via the IP address of your 2nd VM
- 113.129.0.0/17 via the interface to your 2nd VM