LAN A:

Subnet Mask: 255.255.255.192

Network Address: 20.10.172.128

Smallest IP: 20.10.172.128

Largest IP: 20.10.172.191

LAN B:

Subnet Mask: 255.255.255.128

Network Address: 20.10.172.0

Smallest IP: 20.10.172.1

Largest IP: 20.10.172.127

LAN C:

Subnet Mask: 255.255.255.224

Network Address: 20.10.172.192

Smallest IP: 20.10.172.192

Largest IP: 20.10.172.223

LAN B - 75 hosts needs 126 addresses

$126 = 2^{32-x} - 2 \rightarrow x = 7$ so /25 (126 hosts)

LAN A - 50 hosts needs 62 addresses

$62 = 2^{32-x} - 2 \rightarrow x = 6$ so /26 (62 hosts)

LAN C - 20 hosts needs 30 addresses

$30 = 2^{32-x} - 2 \rightarrow x = 5$ so /27 (30 hosts)

B starts at .0 - .127

A starts at .128 - .191

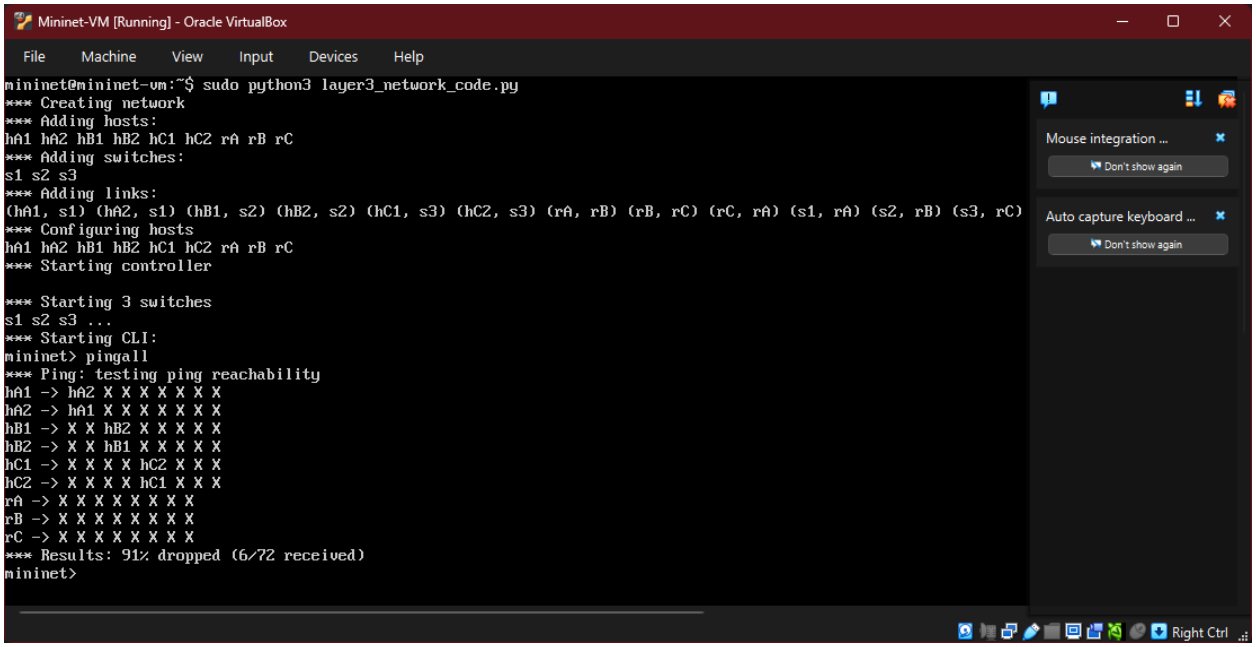
C starts at .192 - .223

/25 → 25 1s + 7 0s → .128

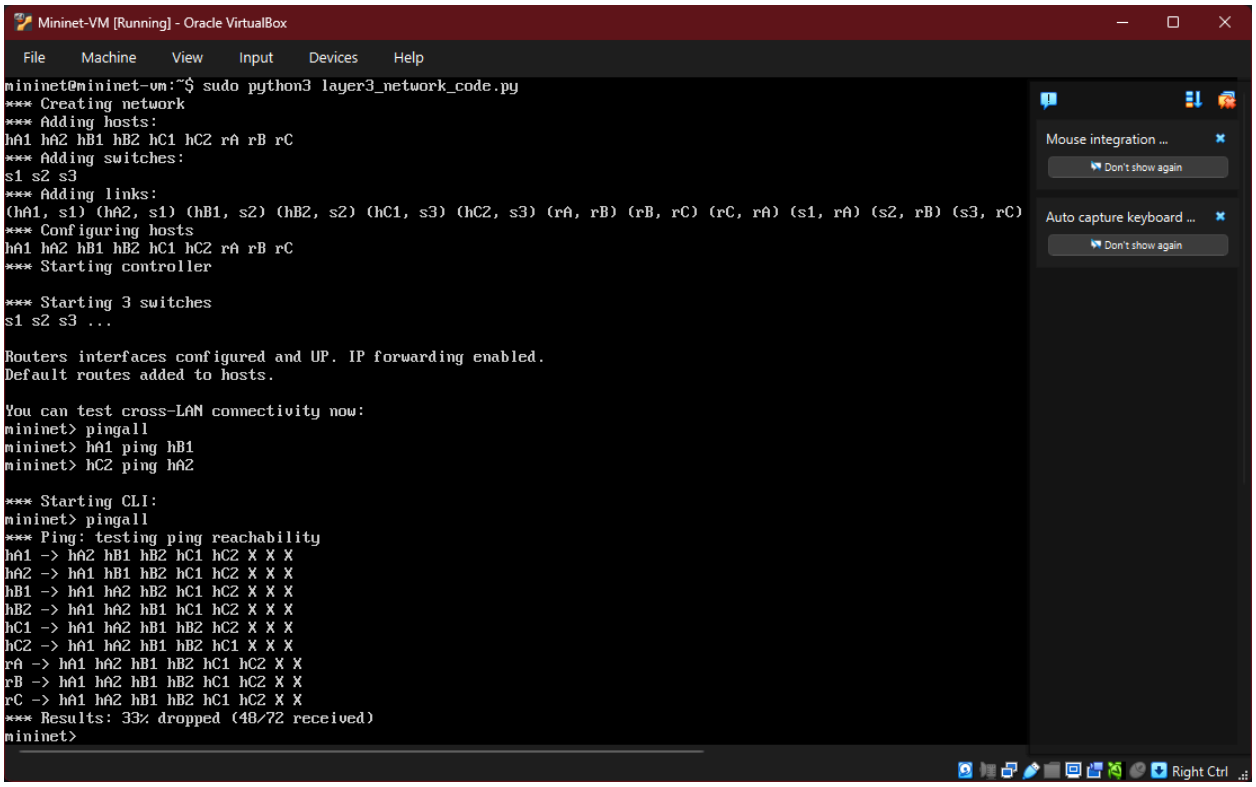
/26 → 26 1s + 6 0s → .192

/27 → 27 1s + 5 0s → 224

Task 2:


Mininet-VM [Running] - Oracle VirtualBox
File Machine View Input Devices Help
mininet@mininet-vm:~$ sudo python3 layer3_network_code.py
*** Creating network
*** Adding hosts:
hA1 hA2 hB1 hB2 hC1 hC2 rA rB rC
*** Adding switches:
s1 s2 s3
*** Adding links:
(hA1, s1) (hA2, s1) (hB1, s2) (hB2, s2) (hC1, s3) (hC2, s3) (rA, rB) (rB, rC) (rC, rA) (s1, rA) (s2, rB) (s3, rC)
*** Configuring hosts
hA1 hA2 hB1 hB2 hC1 hC2 rA rB rC
*** Starting controller
*** Starting 3 switches
s1 s2 s3 ...
*** Starting CLI:
mininet> pingall
*** Ping: testing ping reachability
hA1 -> hA2 X X X X X X X
hA2 -> hA1 X X X X X X X
hB1 -> X X hB2 X X X X
hB2 -> X X hB1 X X X X
hC1 -> X X X X hC2 X X
hC2 -> X X X X hC1 X X
rA -> X X X X X X X X
rB -> X X X X X X X X
rC -> X X X X X X X X
*** Results: 91% dropped (6/72 received)
mininet>
Mouse integration ...
Don't show again
Auto capture keyboard ...
Don't show again
Right Ctrl

Task 3:


Mininet-VM [Running] - Oracle VirtualBox
File Machine View Input Devices Help
mininet@mininet-vm:~$ sudo python3 layer3_network_code.py
*** Creating network
*** Adding hosts:
hA1 hA2 hB1 hB2 hC1 hC2 rA rB rC
*** Adding switches:
s1 s2 s3
*** Adding links:
(hA1, s1) (hA2, s1) (hB1, s2) (hB2, s2) (hC1, s3) (hC2, s3) (rA, rB) (rB, rC) (rC, rA) (s1, rA) (s2, rB) (s3, rC)
*** Configuring hosts
hA1 hA2 hB1 hB2 hC1 hC2 rA rB rC
*** Starting controller
*** Starting 3 switches
s1 s2 s3 ...
Routers interfaces configured and UP. IP forwarding enabled.
Default routes added to hosts.
You can test cross-LAN connectivity now:
mininet> pingall
mininet> hA1 ping hB1
mininet> hC2 ping hA2
*** Starting CLI:
mininet> pingall
*** Ping: testing ping reachability
hA1 -> hA2 hB1 hB2 hC1 hC2 X X X
hA2 -> hA1 hB1 hB2 hC1 hC2 X X X
hB1 -> hA1 hA2 hB2 hC1 hC2 X X X
hB2 -> hA1 hA2 hB1 hC1 hC2 X X X
hC1 -> hA1 hA2 hB1 hB2 hC2 X X X
hC2 -> hA1 hA2 hB1 hB2 hC1 X X X
rA -> hA1 hA2 hB1 hB2 hC1 hC2 X X
rB -> hA1 hA2 hB1 hB2 hC1 hC2 X X
rC -> hA1 hA2 hB1 hB2 hC1 hC2 X X
*** Results: 33% dropped (48/72 received)
mininet>
Mouse integration ...
Don't show again
Auto capture keyboard ...
Don't show again
Right Ctrl