IPV4
(32 bit)

$2^8 = 0 \to 256$

2^{32}

IPV6
(128 bits) 2^{128}

$\underbrace{| 0 \ 0 \ 0 \ 0 |}_{\substack{\text{Group} \\ \text{(Network)} \\ 2^4}} \quad \underbrace{| 1 \ 1 \ 1 \ 1 |}_{\substack{\text{individual} \\ \text{(device)} \\ 2^4}} \times \ 2^8 = 256$

$\left.\begin{array}{l} 0000|0001 \\ \vdots \\ 1111 \end{array}\right\}$ 1st Group $\qquad \left.\begin{array}{l} 0001|0000 \\ \vdots \\ 0111 \end{array}\right\}$ 2nd grou --- - 16 groups

$16 \times 16 = 256$

16
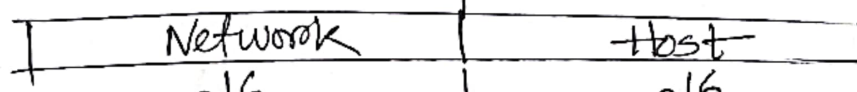
Network		Host
2^{16}		2^{16}
$= 65,536$		$= 65,536$

\# **Class A:**

8   16   24

|0|
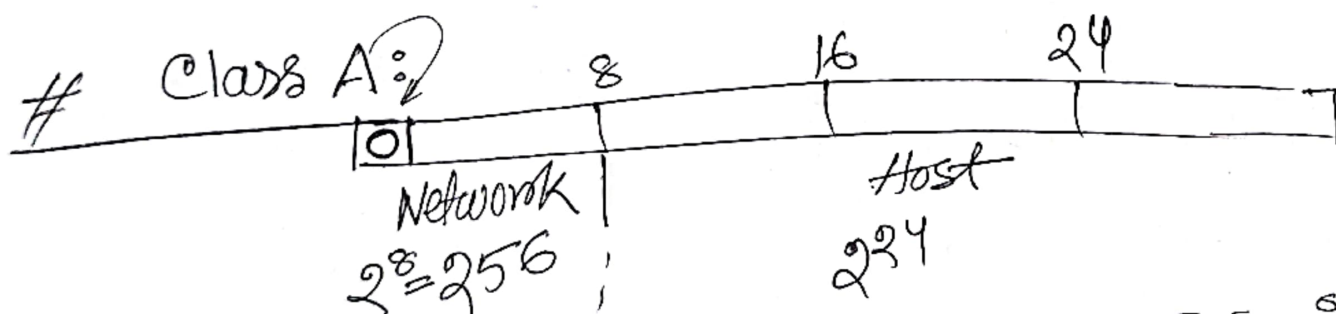
Network   Host

$2^8 = 256$ 2^{24}

1st number   0 000 0000   00 ...   8

11

Range: from 0.0.0.0 → 1st number of 1st Network

to 127. 255. 255. 255

Class B:
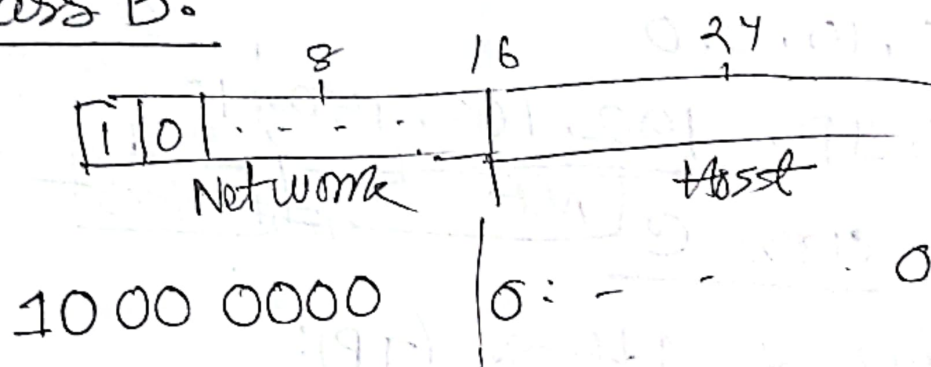
10 00 0000 | 0 : - - - 0

Range: 128.0.0.0 → 191.255.255.255

Class C:
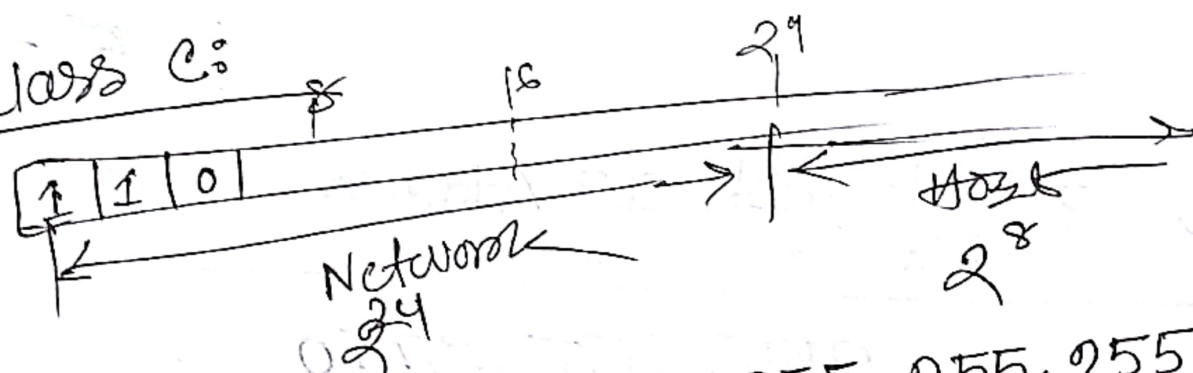
Range: 192.0.0.0 → 223.255.255.255

Class D: Multicasting
Range: 224.0.0.0 → 239.255.255.255

Class E: Future use
Range: 240.0.0.0 → 255.255.255.255

146.10.0.0

Des IP: 192.168.150.10

Class C [Net | Host | Host]

Network Address (IP):
192.168.150.0

1st Host IP: 192.168.150.1
$$2$$
$$3$$
$$:255$$
$$\}256$$
Broadcasting IP Address

Subnet mask IP Address:
Net " " "

255.255.255.0
Network   Host

Ex: 146.35.10.15 $2^{16} - 2$ Hosts
Net   Host

Network & IP Address: 146.35.0.0
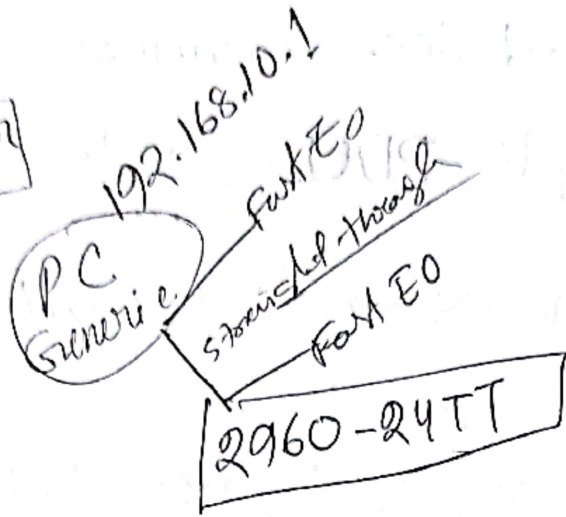Broadcast " " : 146.35.255.255
Subnetmask " " : 255.0255.0.0

IoT LAB

Packet Tracer

OPNET
OMNET
NS2/NS3

PC Service — 192.168.10.1

Port E0

straight-through

Port E0

2960-24TT

(50 years of investment)

PC → Desktop → IP config → Static → close
Click subnet mask
Delete DNS
set IP → 192.168.0.1

Testing
→ Send packet — How?

PC → Desktop → Command Prompt →

TTL = Time To Live (হায়াত of Packet)
\# of hop counts (প্রতিটি Device র hop
Max   থেকে সরে)

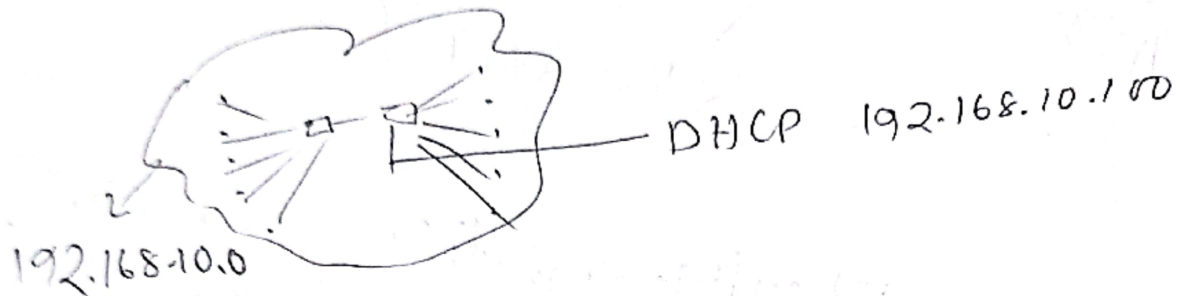192.168.15.32

DHCP Server
Dynamic Host Configuration Protocol Server

DHCP   End·device — Generic

Take a simple **PDU** → select sender Device
                  →   "   Receiver "

click DHCP → Services → click DHCP

— DHCP   192.168.10.100

192.168.10.0

SWITCH → 2960 → Feature → AutoMDIX
                   (Crossover or Straight
                                    through
                     both works.)

Sticky note → preferences > Always show port lebels

30/9

(AI)

FE0/0   Router   FA0/1

20.1
100.2
10.3
192.168.10.0

Switch

Switch

20.1
20.2
20.3

192.168.20.0

(192.168.20.254)

Router config

Gateway
of
Network
(192.168.10.254)

CLI
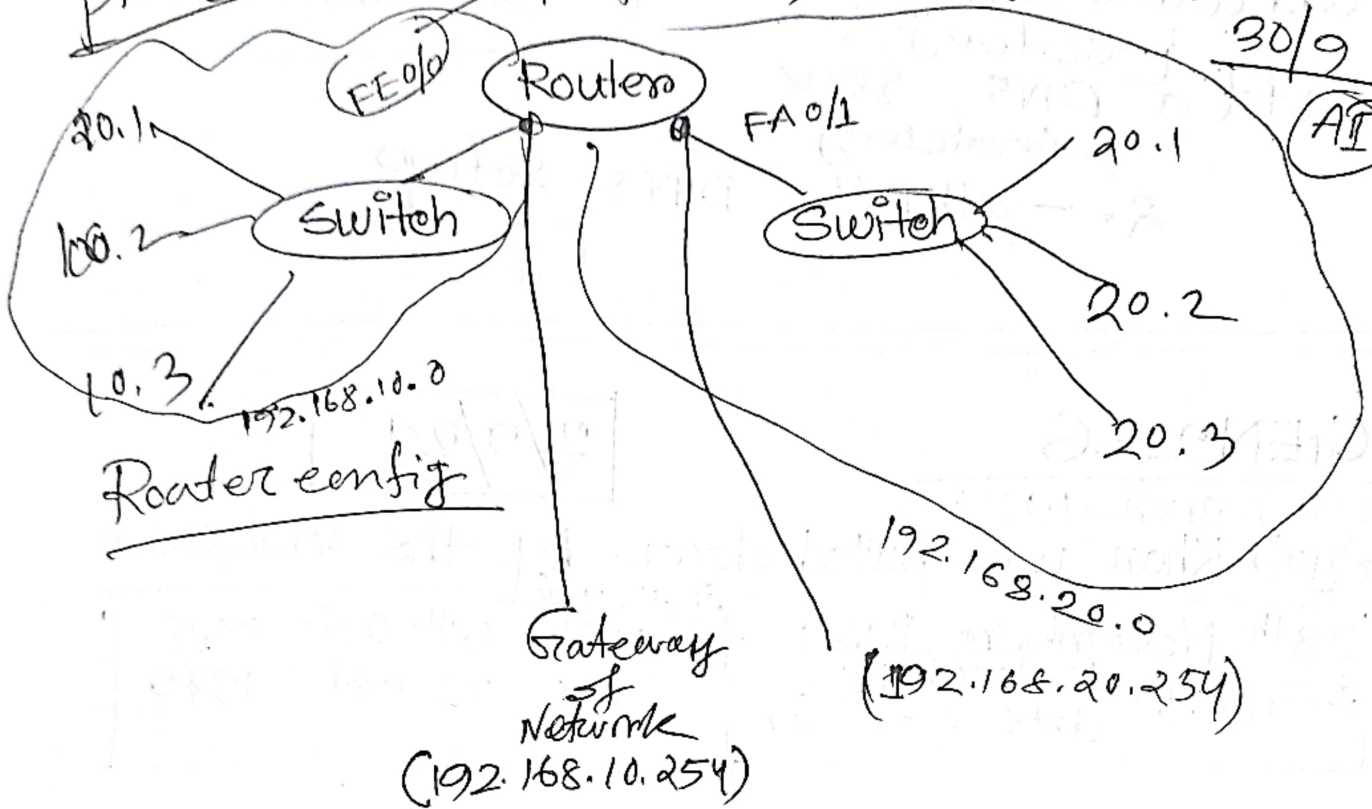
config dialoge : no

Return (Enter button)

> enable
config   (privilage mode)   (Super user)
                                        (Linux)
Hit enter

R(config) # interface fa0/0   (The interface that I want to config)

#1 ip address 192.168.254   255.255.255.0

no shut   link up
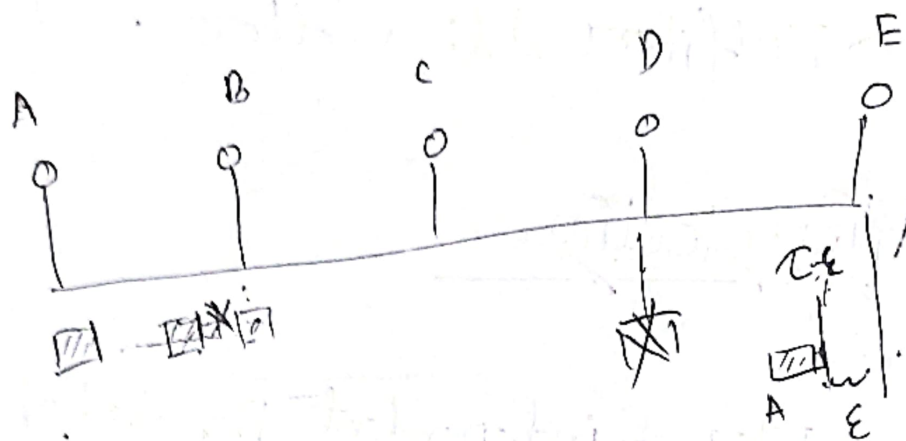
do wr

setup gateway to all Pc's

add a web server <
add a └ Gateway
add a DNS serv
      └ Gateway
      Gateway
   2. — all PC's DNS setup

Same network to
DNS server →

A   B   C   D   E

$\tau - \epsilon$

$\tau - \epsilon + \tau - \epsilon$ 2π

$= 2\tau$

LAB

$\boxed{3/9/24}$

Bit—Map Protocol

A   B   C   D   E

Contension slot

0	1	0	1	1

polling phase

0	1	0	1	1

Gap   Gap

Frm of B   fmt D   fo of D   again polling phase

① Guess   ② Gaps

interface

192.168.40.0

inter

192.168.50.0

R1   serial
      connectin   R2   R3

oso
straight
through
(if auto
MDI)

192.168.10.0   192.168.20.0   192.168.30.0
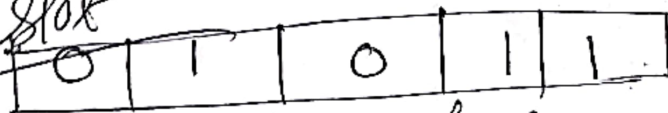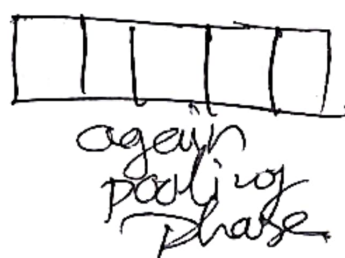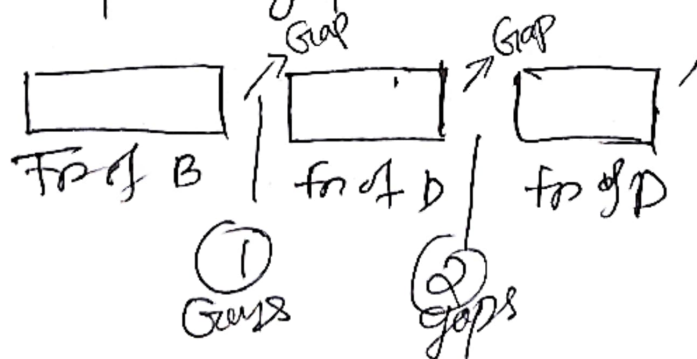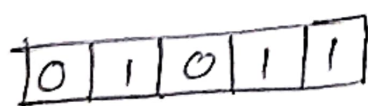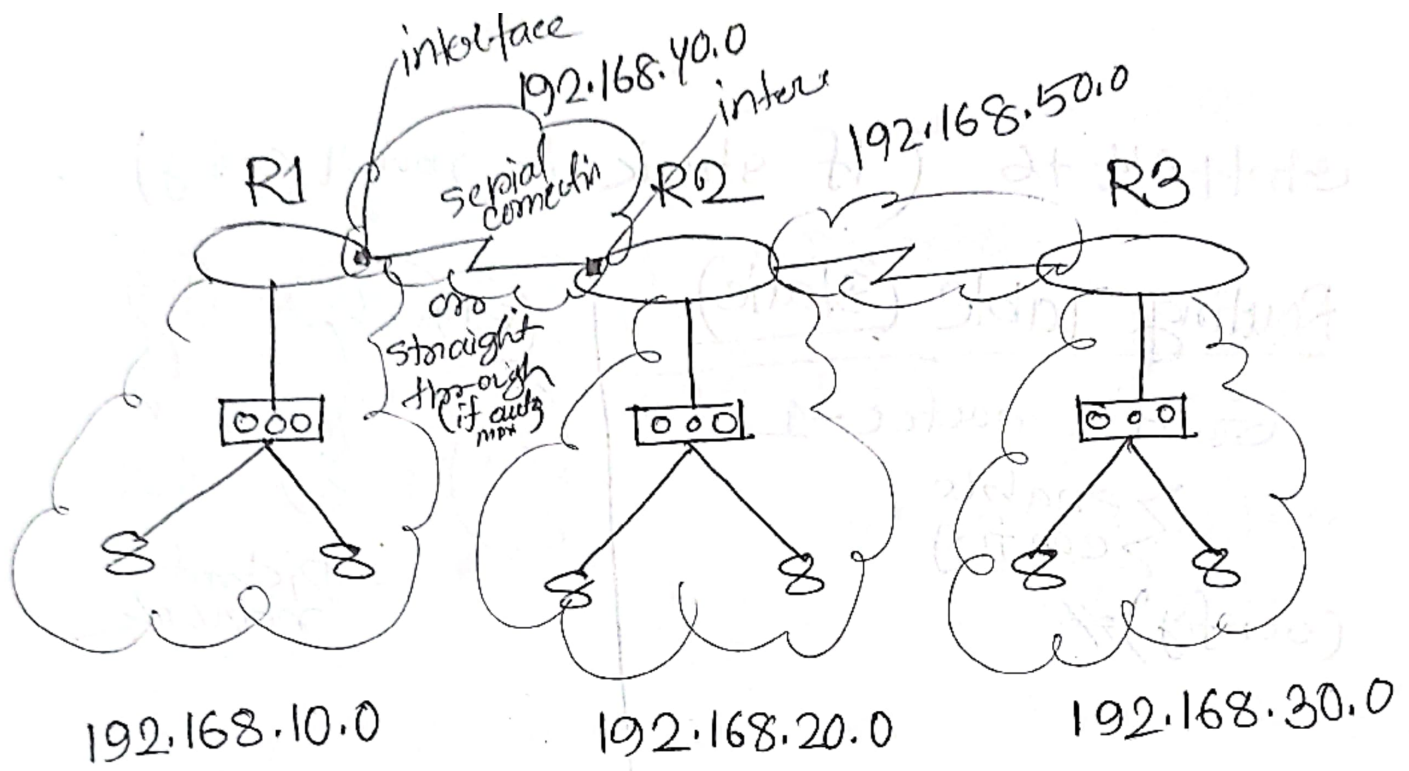
Router selection: Generic (right most one)
                  " (2nd most from right)

switch — router
         ↓
        remeber port   FA 0/0
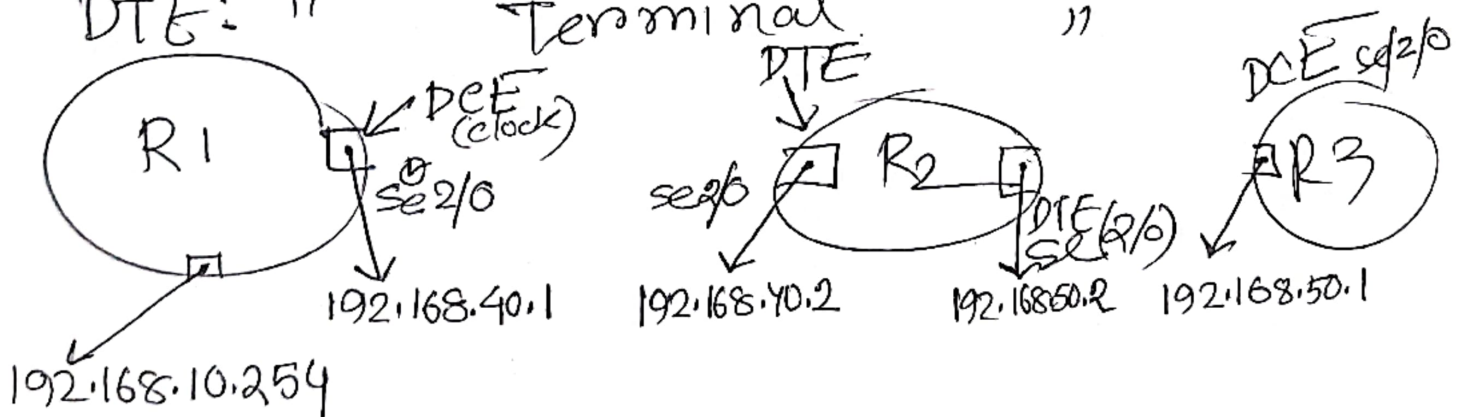   (All R1, R2, R3)

[serial DCE cable] — for router connection

DCE: Data Communication Equipment
DTE: "   Terminal   "
                        DTE   DCE sd2/0
     R1   ↙DCE
             (clock)   R2   R3
             Se 2/0
                      se2/0   DTE(2/0)
                                              Se2/0
             192.168.40.1   192.168.40.2   192.168.50.2   192.168.50.1

192.168.10.254

Notepad — write all command
copy → Router (config) #   [paste] ↙click
                                                     paste
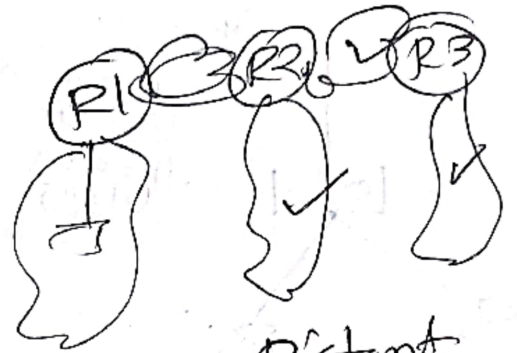   button
                                              in the bottom

Ctrl+Alt+6 (if stuck in router config)
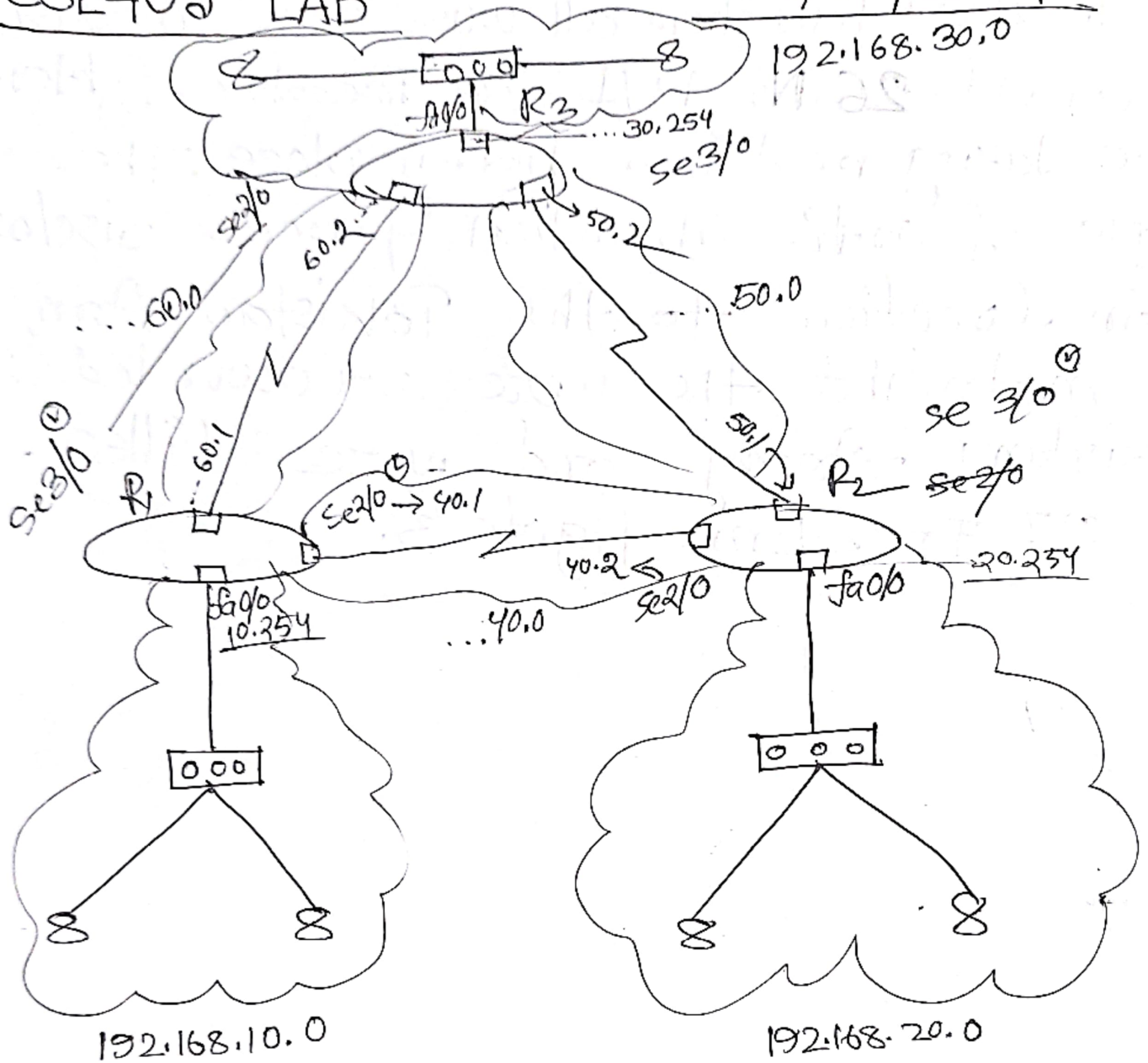
Routing Table (Static)

Go to router-1
$\begin{cases} \text{enable} \\ \text{config} \end{cases}$

(config)#

#ip △ route △ 192.168.20.0 △ 255.255.255.0 △
$\underbrace{}_{\text{Destination Net}}$ $\underbrace{}_{\text{Subnet}}$

@ 192.168.40.2
$\underbrace{}$

to go to 1292.168.20.0
the next hop is ip 192.168.40.2

Distant network

CSE405 LAB 08/09/2024

Dynamic routing table

OSPF (Open Shortest Path First)

router ospf | 1 in process id (1-65536)

network 192.168.10.0 0.0.0.255

directly connected network addresses

wild card mask ip

```
     255. 255. 255. 255̶5̶0̶ 255    (max)
(-)  255. 255. 255.   2̶5̶  0       (my mask)
_____
      0.  0.  0.      255
```

areg
autonomus
system
(max 32)
routers

1
neme