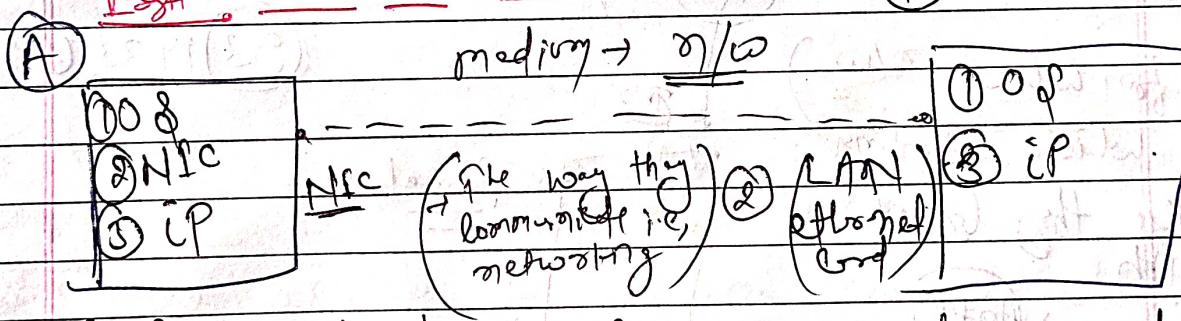
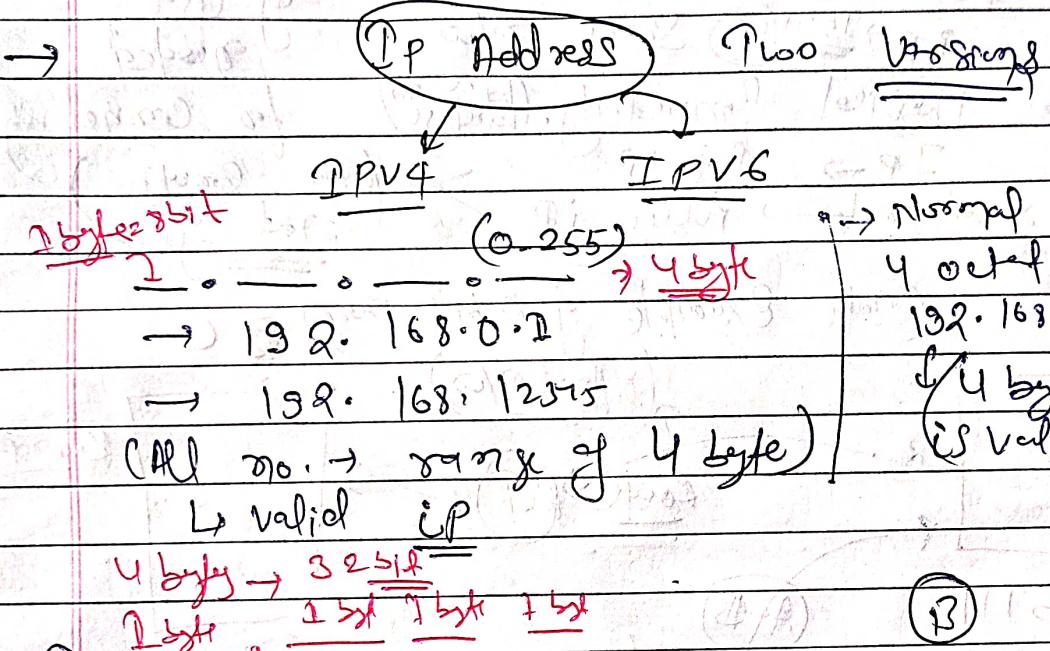


Session - 19

* Agenda - Networking

* Cloud Computing (CNaaS) DoCSK's



- A communicate to B the medium they used to communicate i.e. wired / wireless / n/w / light wave.
- The medium they used to communicate i.e. n/w.
- * If you want to connect A is able to communicate with B then he has some requirements.

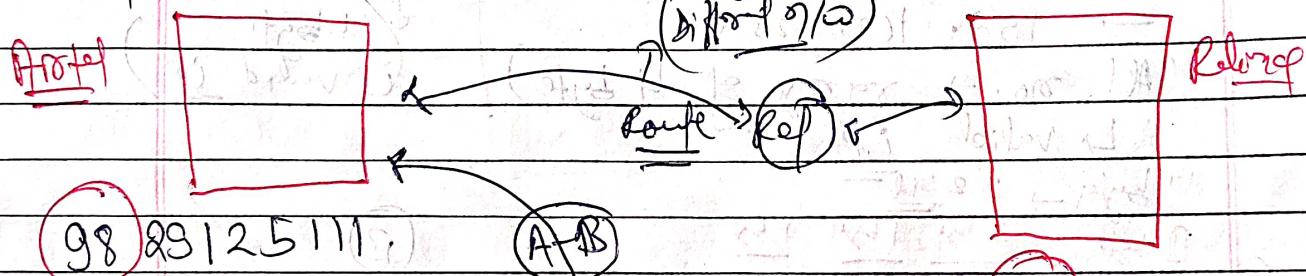
* List →

- ① OS + hardware
- ② NIC
- ③ Physical connectivity.
- ④ IP → port IP
→ public IP
- ⑤ IPv4 → 4 byte
- ⑥ IP → port IP
→ public IP
- ⑦ he has to check they both are in same n/w as yet.
- ⑧ (bulky from same n/w) → IP A → N/w --- N/w IP B

* These all things we need to communicate
6/0 two von 10d.

- ① OS → This bouquet of list
 - ② New card
 - ③ IP → 4 bytes → ④ Same 6/0 needed
 - ⑤ Physical connectivity. (Wireless) for connecting.
 - ⑥ IP → Pvt. IP → (only connect) not my
- 6 list we need for → public IP

* Take Example of mobile phone A B C



(1) Hotel for which 7/0

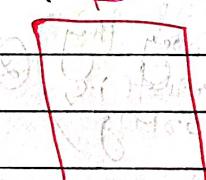
(2) Res which belongs

↓ by this they connect with

Hotel → Hotel

A → B

→ Some 7/0



98 29 11 25 4

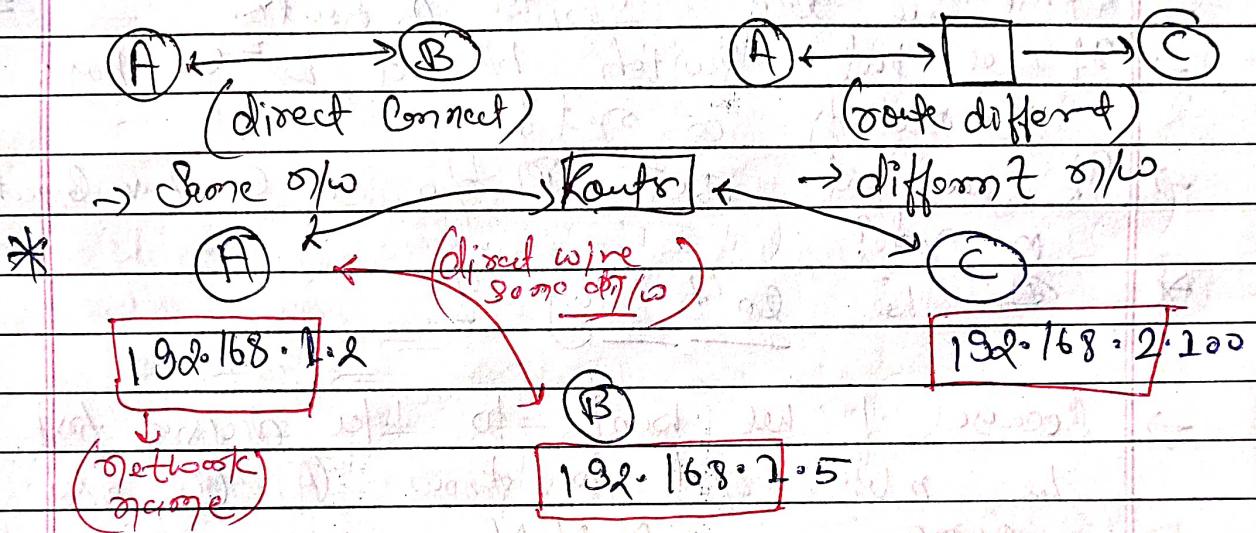
93 14 33 56 28

→ Review day's by looking at the no. we all to find that this number is belongs from which provided. Nowdays it's hard.

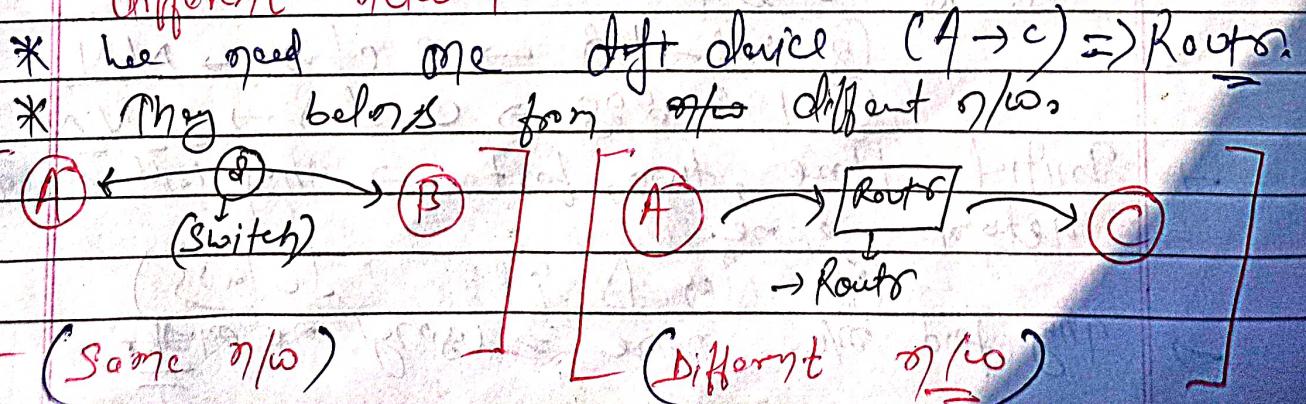
* Nowdays by looking at no., it is harder to analyze from which they belongs.

* IP → 0 --- 255 (Range)
Mob → --- 0-9

- * We can see if mobile or laptop, if (A) & (B) belongs from same game or no they will determine by looking first two digit, they from same m/w then they directly connect with each other.
- * If they belongs from different m/w then first they go to the one medium they route to tell other m/w $A \rightarrow C$.
- * Initial 3 octet is known as your m/w game.



- * If A & B same m/w they can connect through, wire cap i.e., Cross-Cable (data cable).
- * If both belongs from same m/w we can use one device \rightarrow Switch.
- * Same m/w ways connect \rightarrow Cross-cable, Switch, bridge, hub, repeater.
- * If $A \rightarrow C$ want to connect with, different m/w, share m/w packets through different networks.



* Let's discuss about /w anyone -

→ $192 \cdot 168 \cdot 1 \cdot 5 \rightarrow \text{IP of } A$

Date _____
Page _____

→ $192 \cdot 168 \cdot 1 \cdot 2 \rightarrow \text{IP of } B$

→ Can we have connectivity b/w A & R.

→ Here we use Switch or Routers.

→ If we put switch b/w B & R we have connectivity or not?

→ If we put routers b/w R we have connectivity or not?

* This we can't say ?

→ Because if we want to take decision first we must need to know (A) (B) /w anyone.

NNN

$192 \cdot 168 \cdot 1 \cdot 5$

But it is theoretical concept we can't say a/c to book they have class range

/w Class

① $1 \cdot 26 \rightarrow A \text{ class } \underline{\underline{X}}$

According to my OP first octet \rightarrow only 1 to 126, it is class A.

② $128 \cdot 192 \rightarrow B \text{ class } \underline{\underline{NN}}$

③ $192 \cdot 228 \rightarrow C \text{ class } \underline{\underline{NNN}}$

→ Initial three, two, first \rightarrow they will decide network anyone.

④ Class D & E

→ They find /w anyone = empty Network

* In real world we never use classes for this concept, now real world works on class less approach.

* If you have IP add → They know VLAN ID by getting MAC.

↳ (Only way to find VLAN ID)

* A → $\boxed{192 \cdot 168 \cdot 1 \cdot 5}$

Netmask → $255 \cdot 255 \cdot 255 \cdot 0$

(IP)

B → $\boxed{192 \cdot 168 \cdot 2 \cdot 7}$

Netmask → $255 \cdot 255 \cdot 255 \cdot 0$

→ without having Netmask, it is impossible to give it add.

If Config on both (VLAN and VLAN ID)

$\lceil \text{init} : 192 \cdot 168 \cdot 0.782 \rceil$
netwk. $255 \cdot 255 \cdot 255 \cdot 0$

→ We determine if $(255 \cdot 255 \cdot 255)$ will be my subnet then init → 3 will be my VLAN ID .

* Why we need to require a VLAN ID ?

(A) → $192 \cdot 168 \cdot 1 \cdot 2$

→ We need netmask → $\underline{\underline{255 \cdot 255 \cdot 0 \cdot 0}}$
to find the VLAN ID . ↳ Now $(192 \cdot 168) \rightarrow (\text{VLAN ID})$

If any one

say say both

at IP then

three VLAN ID

they are 1, 2, 3

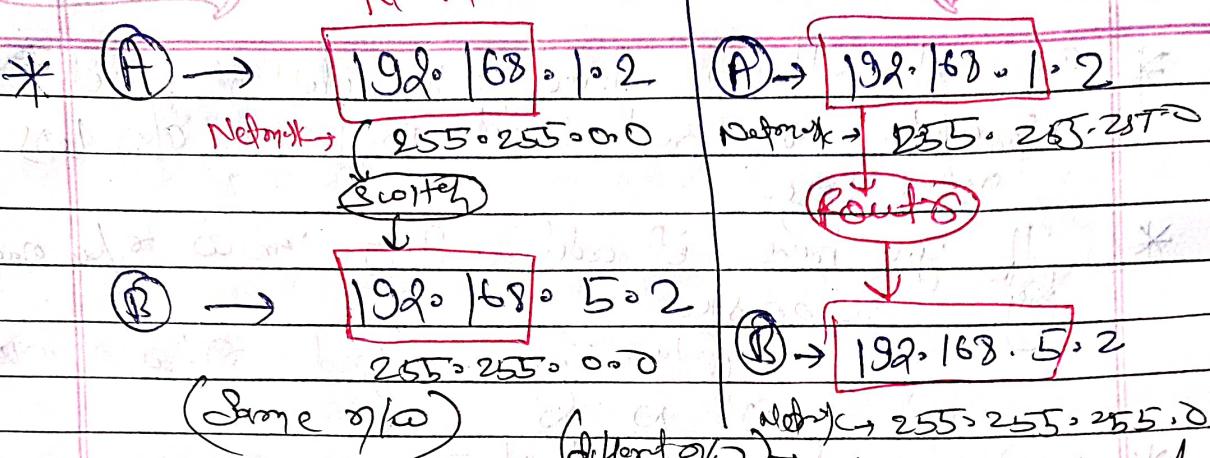
Why other concept?

(B) → $192 \cdot 168 \cdot 3 \cdot 2$

→ On A & B will able to talk with each other

→ By looking at IP we can't find VLAN ID .

* To know VLAN ID we need netmask.



→ In both Condition for connectivity we ==
 need different devices

* For also connectivity we need those all list.
 my two name \rightarrow N N N one method

* $192.168.1.2$ \rightarrow to check /24
 Network \rightarrow $255.255.255.0$ name

to /24 name \rightarrow convert into 11111111.11111111 .
 IP \rightarrow 11000000.000000
 Network \rightarrow 11111111.11111111

Network (AND) 11000000.000000 \rightarrow Now do AND
 Name \rightarrow $(192.168.1.0)$

→ By formula we check for /24 or not.

* After know we can determine here use
 switch or router.

* may be Network will \rightarrow $255.255.128.0$

* Pro. way to write gateway \rightarrow

\rightarrow $255.255.255.0$ \rightarrow Decimal

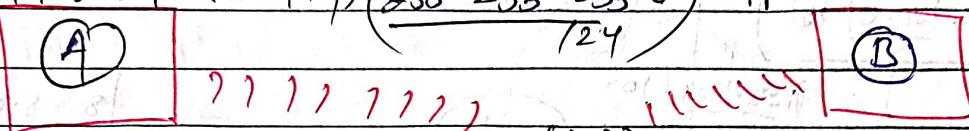
$124 \rightarrow$ Prefix length/
CIDR

* $2^7 \rightarrow 255.0.0.0$ means initial first
 $\text{Sub} /8$ will be your IP if it is
 not same.

* #if config
 config (we have IP & network)

* we have two laptop \rightarrow

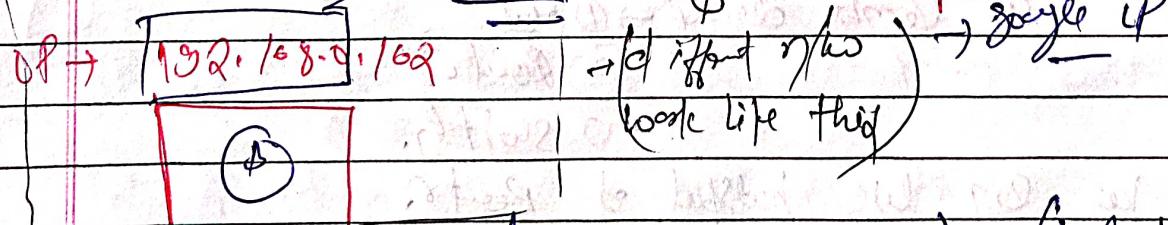
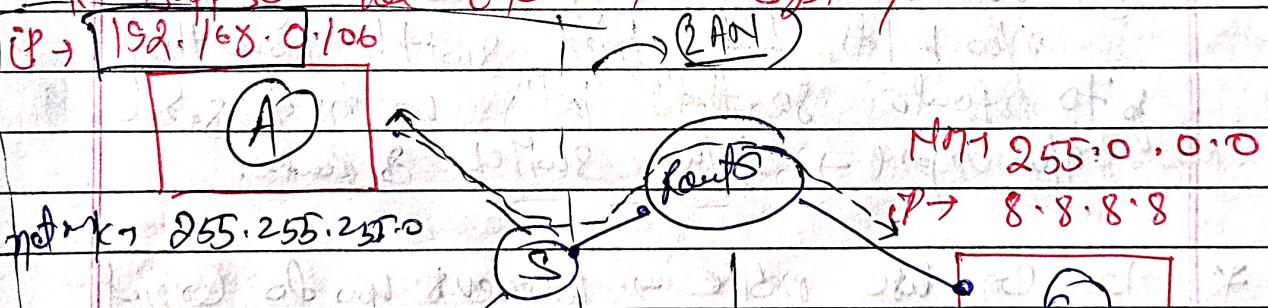
$\text{IP} \rightarrow 192.168.0.162$ $\text{Netm} \rightarrow (255.255.255.0)$ $\text{IP} \rightarrow 192.168.0.106$



host \rightarrow switch
 \rightarrow same η/ω
 \rightarrow edge / hub spot.

* now same host if we connect both laptop and both will go ping each other then b/c of they have same η/ω or same as well as belong from same η/ω . Host acts like switch here

* suppose we one more system



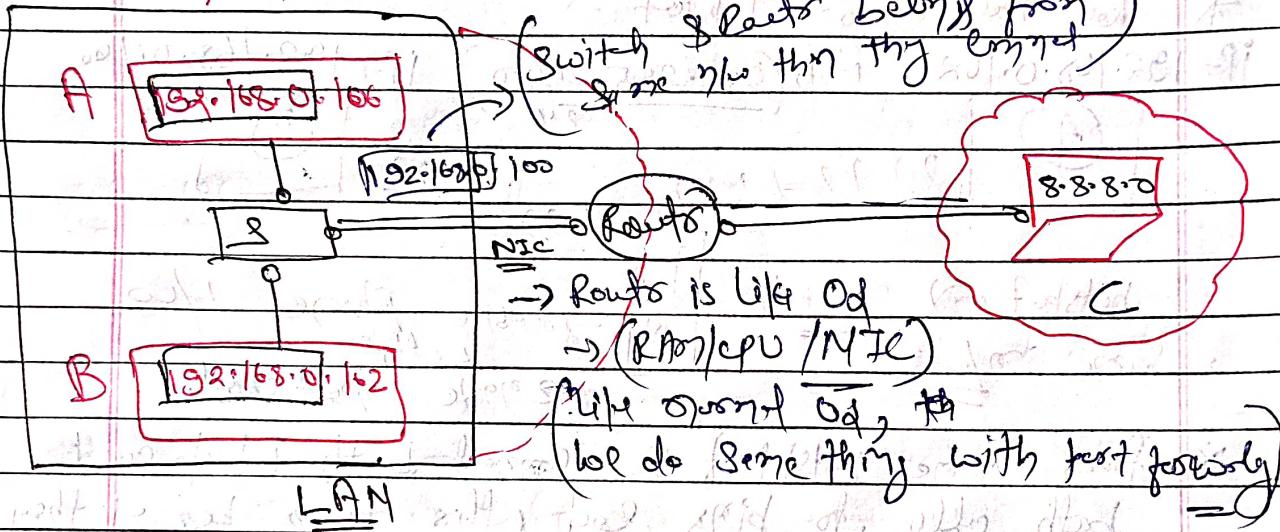
A \leftrightarrow B (good switch. same η/ω) (2 Aon)

A \leftrightarrow C (need router different η/ω)

\rightarrow This is the η/ω topology.

- * If we have multiple OS they connect with switch
they are belongs from same n/w and able
to ping each other, i.e. Local Area N/w
(LAN).
 - ↳ (Locally They are able to connect)

* /24



- One side of Router is part of LAN
- If they not belongs to same n/w then how
 - (A) will able to ping to (B) They take n/w packets but from switch how they go to Router so that's why we need some n/w same → b/w switch & Router.

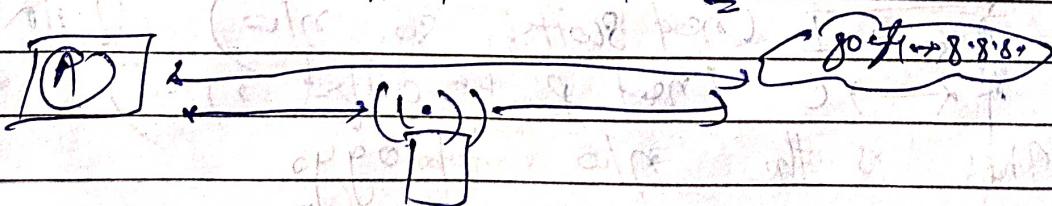
- * We can use mobile → whenever you do connect laptop with hotspot, hotspot looks as →

(①) Combo daycp → ② heel

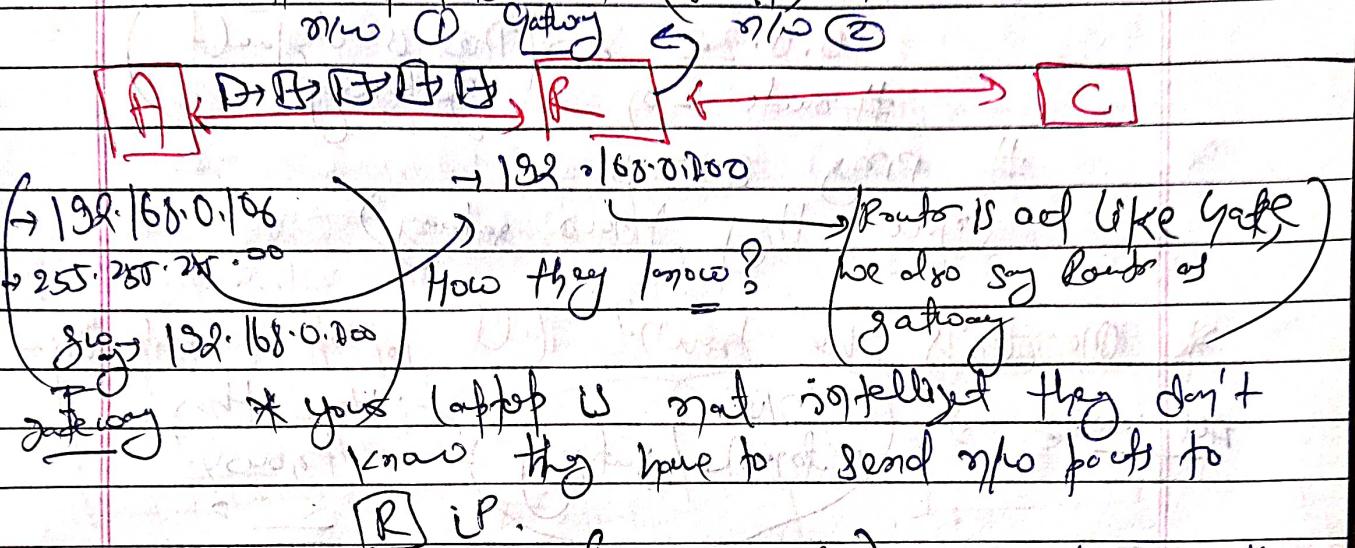
③ Router

④ Switch

- * We can use hotspot of Router.



- * Router is also like device. It has IP.
- * Host A is going to know they have to send their packets to (Router) via its IP.



Gateway * you (after u set) tell them they don't know they have to send their packets to Router IP.

* They have (set of rules) somewhere written that (IP → subnet name → network → gateway)

* Router is act like god from room they go to outside world somewhere to find 8.8.8.8 google ip.

route -o (see the gateway name)

* My way to go to Internet is Router → Gateway.

* Every system they have a /24 and they have routing table cell rules information written there.

* Mobile also have a routing table.

route del -o f 0.0.0.0 (delete first table)

* Gateway opens routes

* Now, we have deleted the gateway (routes) from table \rightarrow

* ① My system able to ping to router (R) \leftrightarrow R
ping 10.2.0.

② But my system not able to ping to 8.8.8.8, they don't know thy gateway thus it will not go to far out of room



* Now, add rule of fdb to go to outside
for hosts

route add -net 0.0.0.0 gw

10.0.2.2 (This is default gateway)

route -r

ping 8.8.8.8

(so they know gateway)

* One thing, we haven't tell laptop to add fdb

All +arp

IP/mask
network/gateway

How they
know

→ The all table written on #route -r, how they
know?

* If you want to configure laptop manually,
Two ways,

manually → Dynamically / Automatic

* By manually →

(Configure with #ifconfig enp0s3 10.2.3.4 netmask
old) 255.255.0.0

#ifconfig enp0s3

* Dynamic / Automatic

and request
Reply with IP

(DHCP)
(8.8.8.8)

* Mobile → (host don't have DHCP)
Gives

(They provide
IP all things)

→ They give IP to file system.

* In OS → DHCP is program they automatic
give IP to OS.