Lecture 7 - OSI Model

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* Mobile : Sim
  - Jio, Airtel, Vodafone.

These companies require phone no.
↓
Indian Govt Allocate them.
↓
Idea : 99 se start wale → 8 digit remain → 10^8
Airtel : 86 se start wale → 8 digit remain → 10^8

Uninor
↓
932 - - - - -
↓
10^7

Tata Docomo
↓
934 - - - - -
↓
10^7

- +91 is country code, they are not allocated.

Idea : [63.0.0.0]
→ $2^{24} - 2$ → Host

Idea → Class C ka network
↓
[198.67.28.0] → $2^8 = 256$
n/w id | Host id

divided in 4 Parts
64 Delhi | 64 UP | 64 UK | 64 HR

Delhi ← 00 _ _ _ _ _ _ → $2^6 = 64$
UP ← 01 _ _ _ _ _ _
UK ← 10 _ _ _ _ _ _
HR ← 11 _ _ _ _ _ _

→ 198.67.28.0 } Delhi →
198.67.28.63

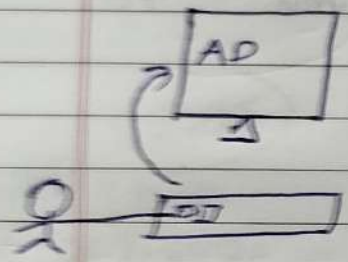
198.67.28.0/26 → 2 bit ko reserve krdia, so 24+2 = 26
198.67.28.63/26
shows n/w id.

01 0 0 0 0 0 } 198.67.28.64 } → Allocated to UP.
01 1 1 1 1 1 } 198.67.28.127 }

- Half distribution → 1 bit reserve.
- 4 parts → 2 bit reserve
- 8 parts → 3 bit reserve.

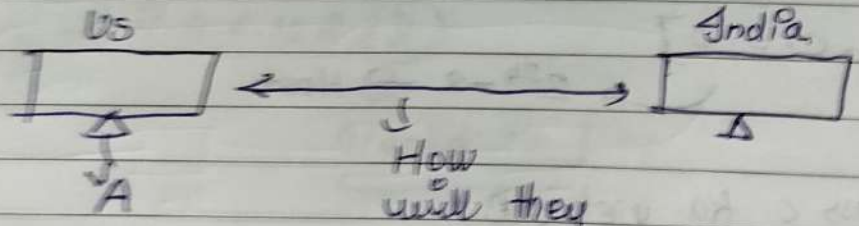
- We can never do in odd no. of parts.

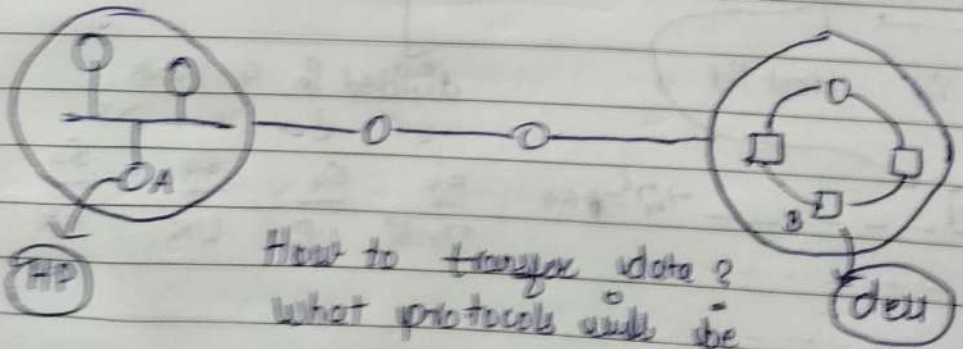
* OSI Model [Open System Interconnection]

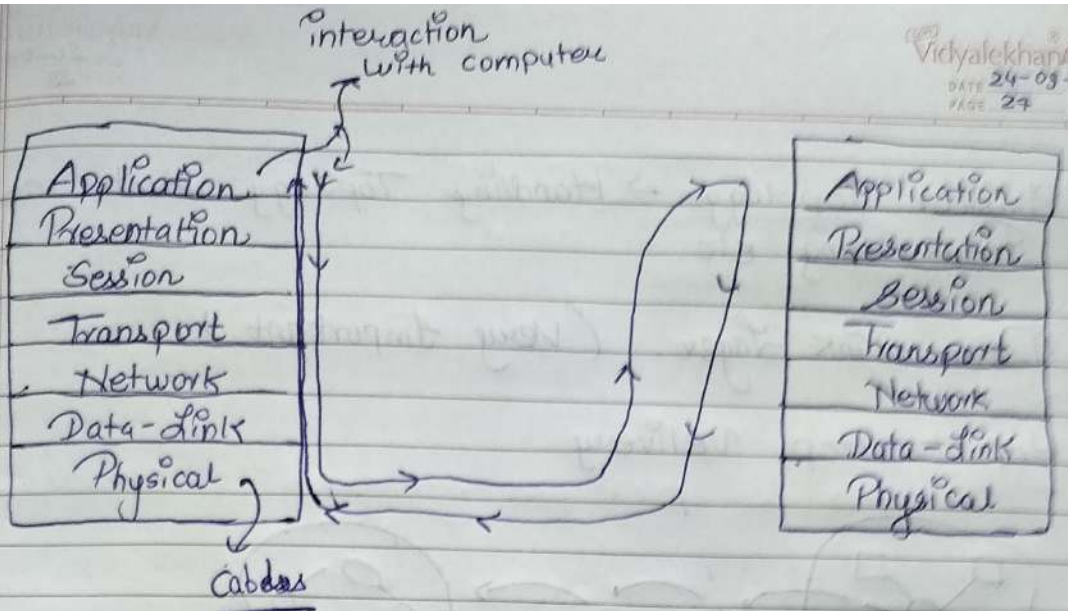


} For one computer, with help of OS, monitor & keyboard can communicate.

- Monitor & Keyboard would be connected,

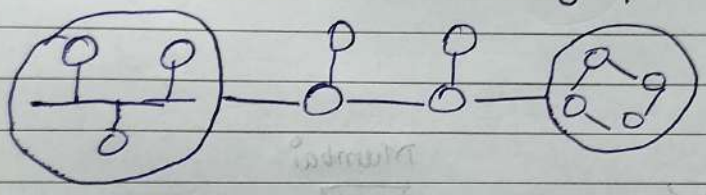






- Data is sent layer by layer.

* Physical Layer
  ↓
  How data travels actually ?



Use Cases →

1) Cable & Connectors.
2) Repeaters ↴
   Signal ki strength kam hone par increase ki jana.

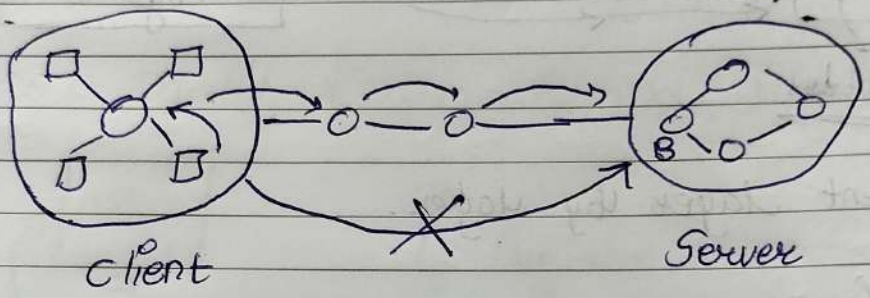
3) Data rate control → Speed of data should be in control.
   ↴ 3 mb/ps , 10 mb/ps.

4) Encoding → Digital signal ko Analog signal mei convert karna. ↴ MODEM

5) Physical Topology → Handling Topology such as Bus, ring etc.

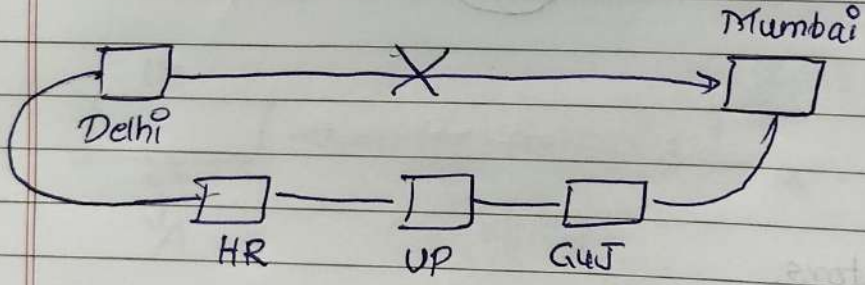
[2] Data Link Layer. (Very Important)

- Hop to Hop Delivery



- Hop-Hop → Intermediate Path.

Eg → Post office



- Hop to Hop → Delhi to HR
  ↓
  Responsibility

- Router have 3 layers
  ↓
  N/w, Data link, Physical.

- Devices/Server has 7 layers

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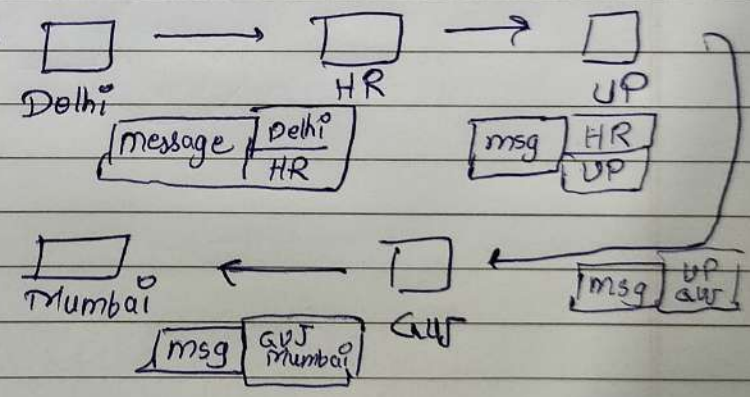
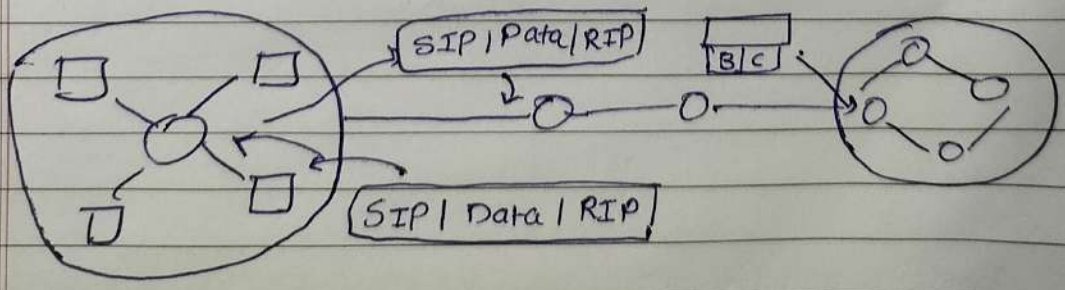
* Giving Physical Address → MAC Address (Ethernet Address)

- Windows Command – getmac /v/fo list
- One device can have multiple mac addresses.
  ↓
  NIC (Network Interface Card)
  ↓
  How many ways to connect to the Internet ?
  ↳ 4 ways = 3 MAC Address.
- Unique nahi hota char ek device ke liye.

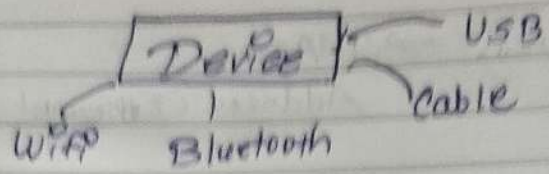
Eg → Sender Address, Reciever Address, Message



- Having address is very important, otherwise it can go in wrong direction.



- Data is transferred through mac address.
- Device specific hota hai.
- MAC Address is not allocated to anyone else



- NIC
- IP Address is used for geographical reasons.