JUN '19
27
THU

30/1/24

CNIP

Computer network → set of nodes, connected by communication link

Computer network is mainly useful for resource sharing

Basic characteristics of Computer network

imp (i) fault tolerance :- (ability to continue working despite failure)

(ii) Scalability :- network should be increasable

(iii) Quality of service :- priority manages realtime communication has priority over data communication

(iv) Security :- provides security of data.

★ Data communication / data flow

→ simplex → Half duplex → full duplex

JUNE
S S M T W T F S S M T W T F S
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Spend some time alone. Celebrating the unique gift of being you

USB → universal serial bus.

(keyboard, TV)

JUN '19
28
FRI

• simplex :- one data transfer at a time

• half duplex :- sender sends msg, then receiver replies ✗ not (walky, talky) simultaneously - one by one.

• full duplex :- both simultaneously. (chatting).

★ Components of nodes → sender / receiver
→ medium (medium) → wired ✓ / wireless ✓
→ services. (shopping, emails, chatting, ticket booking)

medium

wired (signal form) → types of wires
• USB ✓
• coaxial ✓
• optical fibre ✓ (——)
• ethernet → straight (for diff) : crossover (- - -) (same type devices)

wireless (waves form)
• bluetooth
• wifi
• infrared ✓
• radiowaves (bluetooth)
(TV remote)

Plugins → • microwave ✓
• satellite. ✓ (gps) (weather forecast)

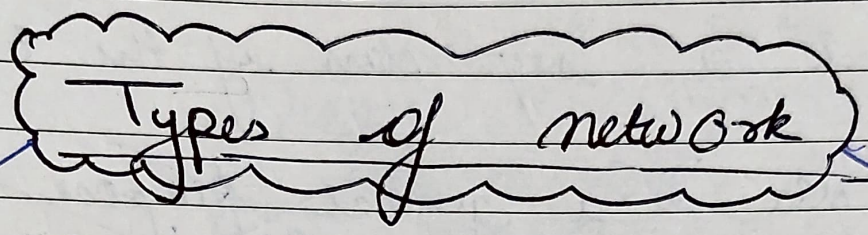
S S M T W T F S S M T W T F S S M
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

2019

The cure for boredom is curiosity. There is no cure for curiosity.

28-06

CN P




Peer to peer n/w

client to server n/w

**Protocols** (strict set of rules)

- message encoding (end to end encrypted) ✓
- message formation + encryption (IP address) ✓
- message size (order and size of message)
- message timing
- message delivery options → unicast (single data ko hi transfer kr sakte h)
  → multicast (set)
  → broadcast (all)

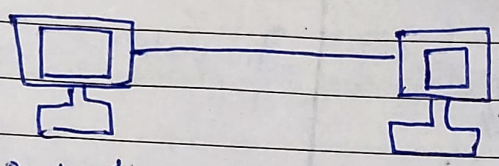
1/2/24

JUL '19
10
WED

CNIP

Types of network

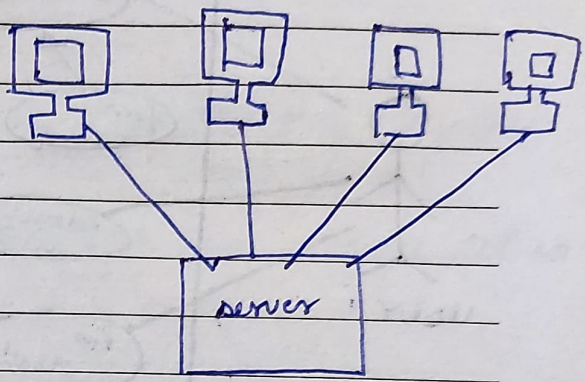
(i) peer to peer




disadvantage
non scalable.

adv
both can be sender or receiver

(ii) client - server

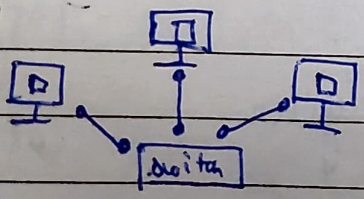



adv
- Centralised administration (i.e power is with one (servers))
- scalable

dis
- slower
- no security

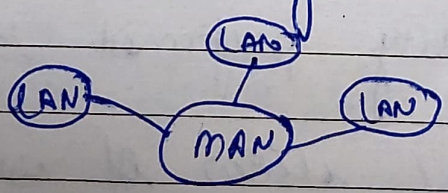
* Computer networks

LAN
local




eg :- universities, offices, labs, home.

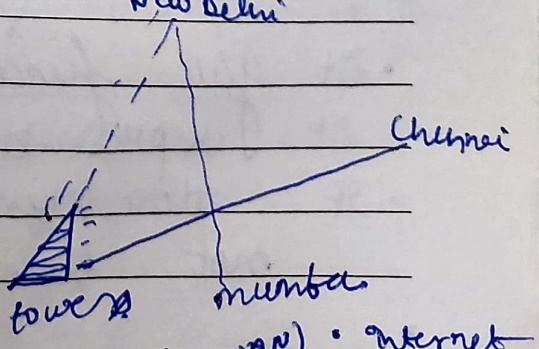
MAN
metropolitian (city)




routers + switches

eg :- stores with in same city.

WAN
wide (inter state)




(WAN) • internet

| W | T | F | S | S | M | T | W | T | F | S | S | M | T | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |

2019

Creativity and imagination are part of the wonder sprinkled around us.

10.07

TUE

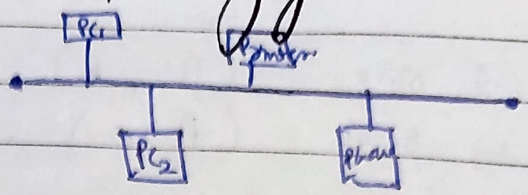
7/2/24

TP + FP

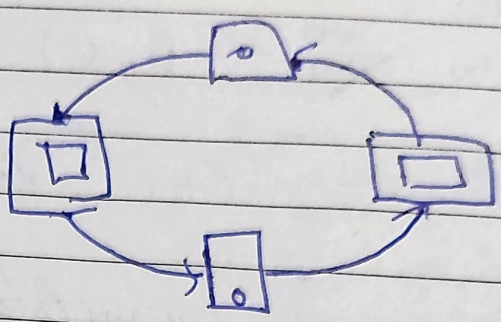
TCNIP →

## Network Topology →

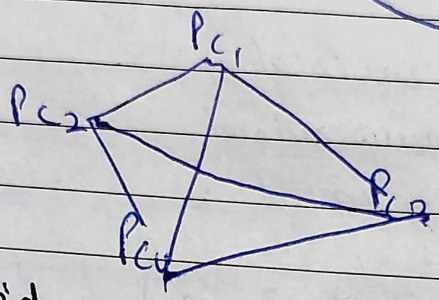
(i) Bus Topology.
- bidirectional




(ii) Ring
→ unidirectional.



(iii) Mesh




(iv) ~~Hyp~~ hybrid

mixture of above topologies.

---

- IP address ↔ IPv4 → version / IPv6
  (logical) ✓
  → 32 bit
  → Varies from (state to state)
  → Decimal
  → 0.00.0

- mac
  (physical hardware) ✓
  → 48 bits
  → manufactured.
  → Hexa-decimal
  70-00-ED-AC-54

- port
  → range ✓
  (0 – 65535)

JUL '19

27

SAT

9/2/24

# OSI model — 1

→ 7 layers

Open system interconnection.

→ TCP/IP ⟶ Internet protocol

↳ transmission control protocol

app present session trans netw data link phy

# layers of OSI model

~~(X) data link layer (6)~~

(X) physical

link layer (6)

data ↑ layer (5)

(X) network ↑ layer (4)

↑

(X) session layer (3)

↑

(X) presentation layer. (2)

↑

(X) Application layer (1)

app. pres sess. trans netw data link phy

wired → signal
wireless → waves

JUL '19
28
SUN

* layers of OSI model (user)

Application layer (→ generates password)
↓
presentation (→ encodes the password)
↓
Session (→ syntax and all)
↓
Transport (→ segregates the data)
↓
Network (→ routing)
↓
Data (→ encrypt / compress).
↓
Physical link layer (wired / wireless medium)

(i) application layer :- (file transfer & access management)

→ mails services
→ directory services.

(ii) presentation layer

→ Syntax & semantics (gives the section a no. of room)
(predefined structure)
used for
→ translation, encryption & Compression.
(same for all devices) (encode) (compress, decrease size)

| W | T | F | S | S | M | T | W | T | F | S | S | M | T | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |

2019

JUL '19

29 MON

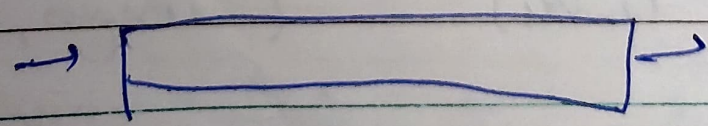
- session layer (establish & maintains relationship)
used for
(i) dialogue control
(ii) synchronisation (check point)
[divides & acknowledge]

* Transport layer
used for
(i) port addressing (16 bits)
(ii) segmentation & reassembly
(iii) Connection control
(iv) end to end flow control
(v) error control

* Network layer
- defines IP address (routing).
IPv4 (32 bits) IPv6 (128)

* data link
→ physical address, define, flow & error control
→ access control

* physical link (converts into bits)

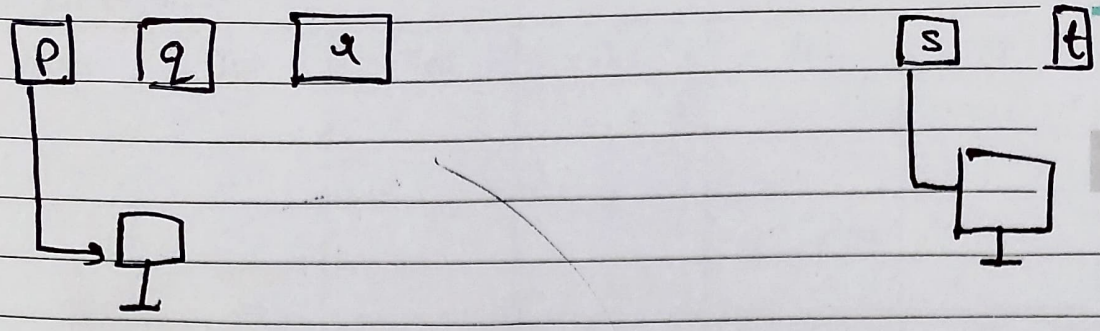


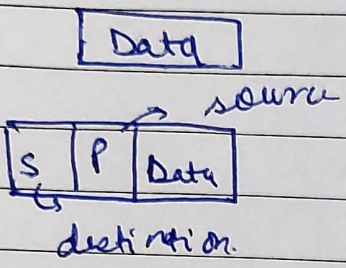
JUL '19

30

TUE

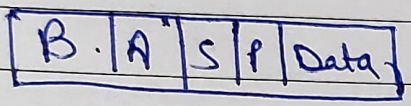
OSI



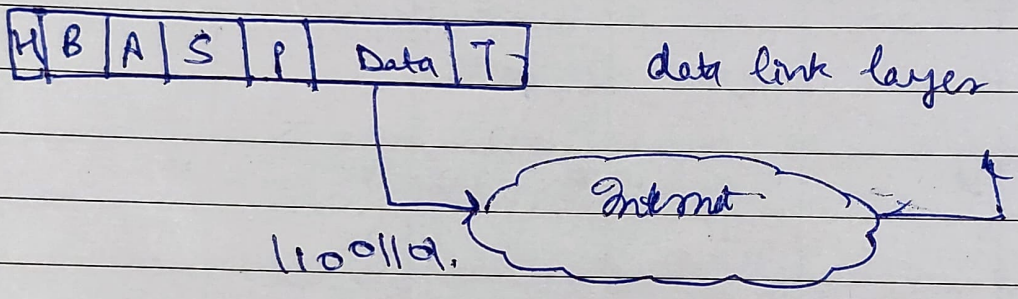




Application.

Transport layer




Network



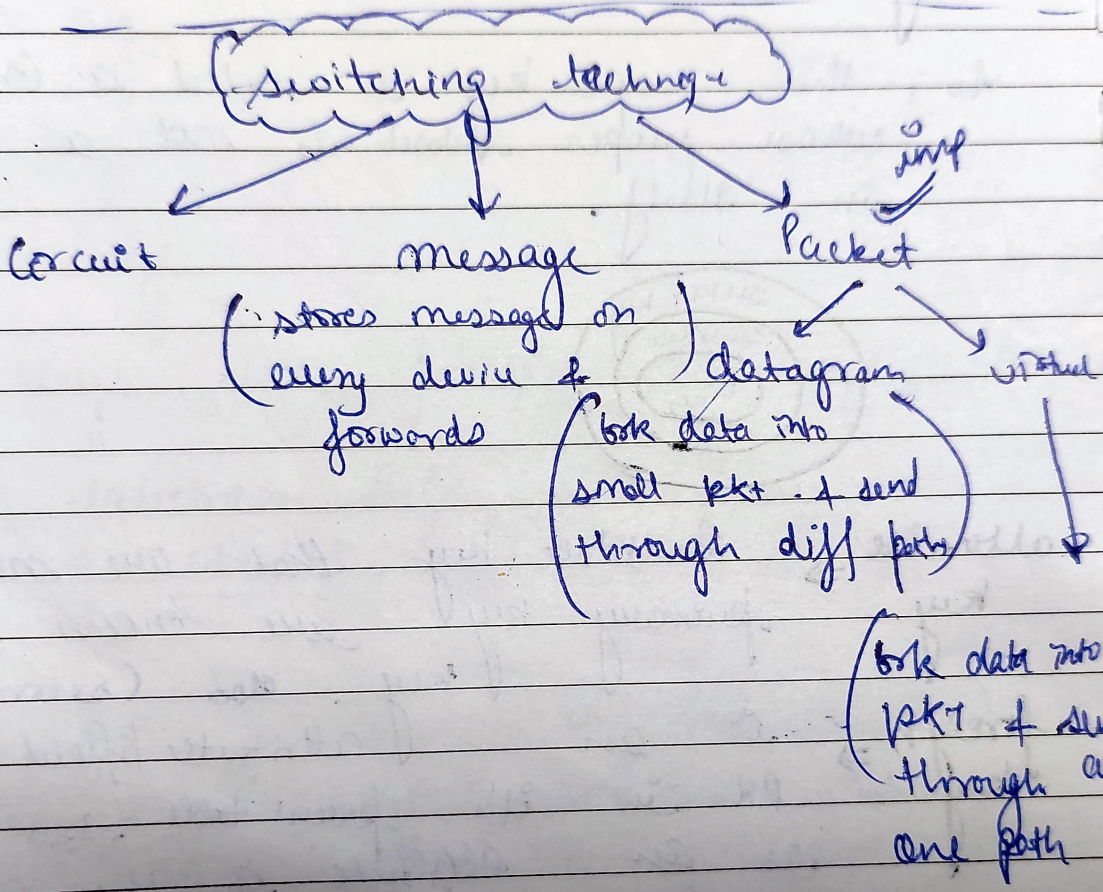

data link layer

* physical → responsible for movement of the bits to next node

* data link → responsible for moving frames

* netwo → respon for delivery of net packets from the source host to destin

session → dialog control & synchronization


Switching techniques
imp
Circuit
message
(stores message on every device & forwards)
Packet
datagram
(brk data into small pkt & send through diff paths)
virtual
(brk data into pkts & send through any one path)

# CNIP

TCP/IP (4 layered)

| | | | | | |
|---|---|---|---|---|---|
| 7 Application | — Application | DNS | BootP | SMTP | FTP |
| 6 Presentation | | | DHCP | POP | TFTP |
| 5 Session | | | | IMAP | |
| | | | | | web HTTP |
| 4 Transport | — Transport | | UDP | TCP | |
| 3 Network | — Internet | | IP | IP support | Routing Protocol |
| 2 Data link | — Data layer | | PPP | NAT | ICMP |
| 1 Physical | | | | | (Host to network) |

...4 layers...

NAT → network address translation

UDP → User datagram Protocol

TCP → Transmission Control protocol

FTP → file transfer protocol

TFTP → Trivial file transfer protocol.