PAGE No.
DATE 3/7/22

- Structure of the Network :

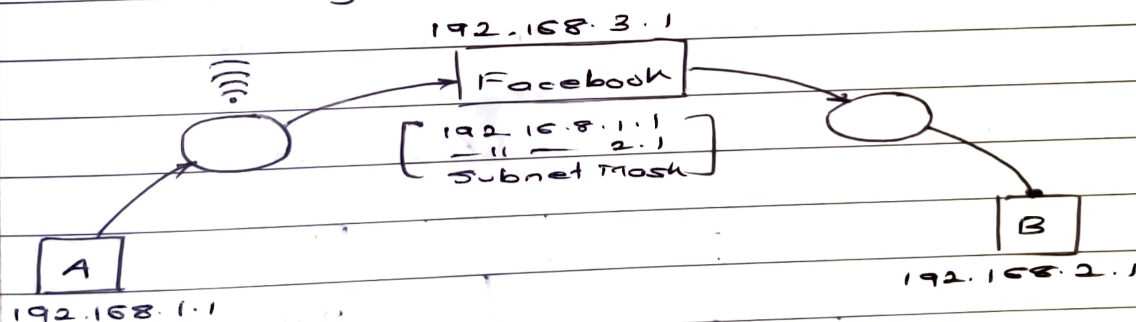
eg: Amazon Order — Received

- OSI Model : (Theoretical)
  - ↳ Standard to communicate
  - ↳ 7 Layers

Own network (①–④)

① Application → software, Browsers
② Presentation → Encrypt, Convert/Translate, compressed → SSL
③ Session → Managing connection/Auth
④ Transport → TCP/UDP (Data Transferred), Segmentation → (Sent in small parts), Error Control, checksum
⑤ Network → Router, communicating with other network, Logical Addressing, Load Balancing
⑥ Data Link → physical Addressing (MAC Address), Frame
⑦ Physical → Hardware, Bits, electrical signal, cables

Network Layer



- TCP/IP Model (Internet Protocol Suite) (Practical)

① Application
② Transport
③ Network
④ Data Link
⑤ Physical

3 7 22

∴ Application Layer :

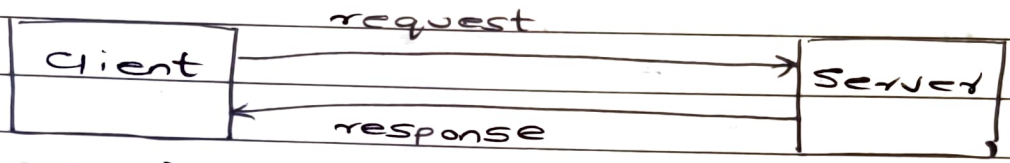
→ Users Interact

eg. Whatsapp, Browser

→ Where - Devices

• Protocols

① • Client - Server Architecture



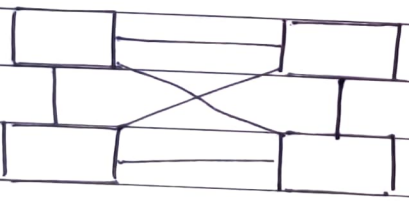
(users)

(Hosting)
(Many servers in big companies)
(Data Centers)
↳ Static IP

• ping → round-trip time from origin to host computer & echoed back

we cannot reduce the 'ping time

② P2P (Peer-to-Peer) Architecture :



Everyone is a client & a server

Hybrid is possible with centralized databases

• Types of Devices

① Repeater - Doesn't amplify

② Hub - multiport repeater

↳ Active

↳ Passive

PAGE No.
DATE 3/7/22

③ Bridge → Filters content (DL Layer)
↳ Transparent
↳ Source Routing
④ Switch → Multiport Bridge, Error checking
⑤ Routers → Network Layer
⑥ Gateway → Passage to connect to 2 diff net
⑦ Brouter (Bridge & Router) - Combination.

• Protocols
Web Protocols
1] TCP/IP:
↳ HTTP/HTTPS
↳ DHCP
↳ FTP
↳ SMTP - Send email
↳ POP3 / IMAC - Receive email
↳ SSH - Login to other PC terminal
↳ VNC (Virtual Network Computing)
↳ TELNET (Port 23) (Not encoded)
5] UDP: Stateless, Data loss

Program: Whatsapp

Process (Features) ... — Send message
Record video

Thread ..... Set up Page
Open camera
(Does one single work)

PAGE NO.
DATE 3/7/22

- Sockets :
  - ↳ Send message (interface, software process)

- Ports
  - IP → Tells which device, we are working with
  - Ports → Tells us which application we are working with
  - → Ephemeral Ports
    - Servers need fixed port numbers
    - Clients can change on its own

- HTTP : (Application Layer)
  - ↳ It uses TCP (Transport Layer)
  - ↳ Stateless Protocol (server doesn't store client's information)
  - ↳ Connection oriented

- HTTP Methods
  - → Tells server what to do
  - ① GET → Request data
  - ② POST → Send Data (Form)
  - ③ PUT
  - ④ DELETE

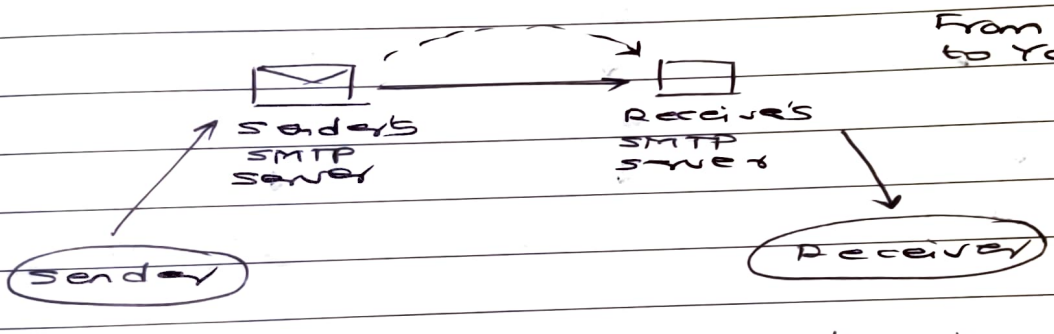
- Error / Status Codes
  - ① 100 - → Information
  - ② 2xx - → Success
  - ③ 3xx → Redirecting
  - ④ 4xx → Client error
  - ⑤ 5xx → Server error

PAGE No.
DATE 3/7/22

- Cookies : unique string, stored in client browser
  → visit 1st time, cookie is set

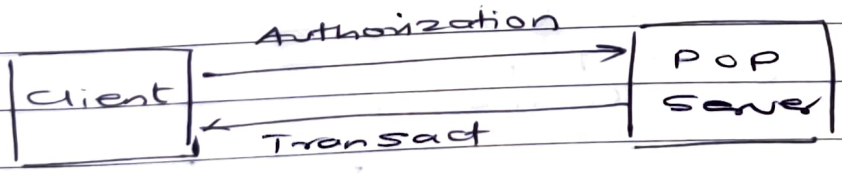
Third party cookies
↳ cookies set for url that you don't visit

- How email works :
  → SMTP & POP3 (Application)
  TCP (Transport)



↳ If gmail - gmail → It does directly

* nslookup - type = mx gmail.com
(post office Protocol)
- POP - Port 110 (Receiving email)



- IMAP (Internet Message Access Protocol)

PAGE No.
DATE 3/7/22

- DNS (Domain Name System)

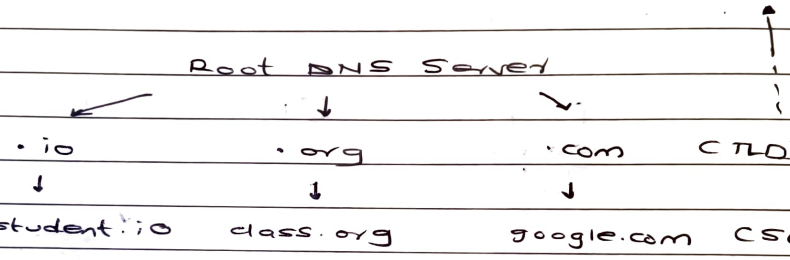
eg. Enter (google.com) → It fises DNS to find IP of google server

→ It is difficult to remember IP address

2nd-level domain

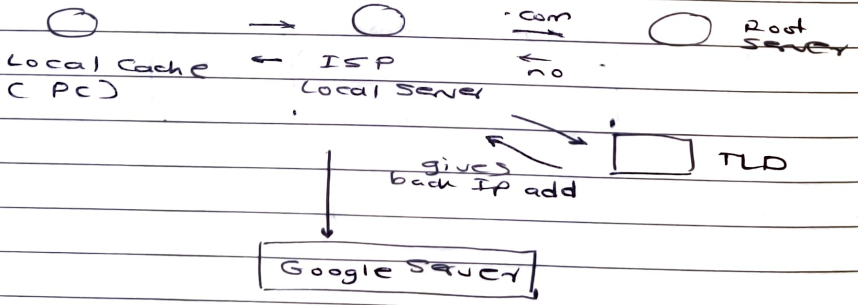
mail.google.com

sub-domain Top-level domain



* website - root-servers.org

- Internet Corporation for Assigned Names & Numbers (ICANN) - TLD are managed by them



- You only rent a domain

- dig google.com

—11— Application Layer —11—

END