

## System Design: HLD

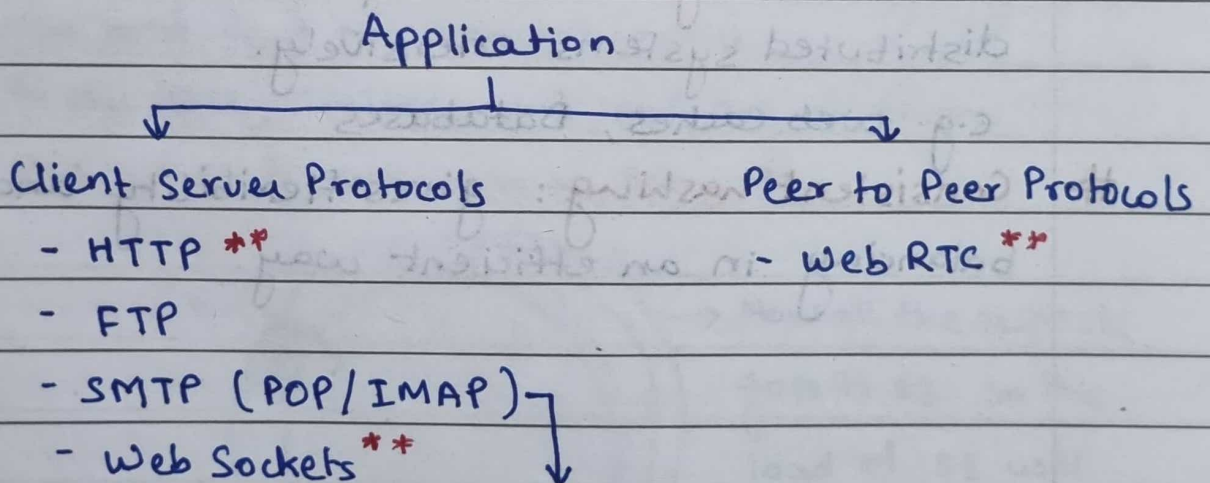
### #1: (1) - Network Protocols

- What is Client-Server Model
- Peer to Peer Model (web sockets)
- HTTP vs TCP vs UDP vs FTP vs SMTP (POP, IMAP)

→ Network Protocols define the rules so that 2 computers/systems can communicate with each other.



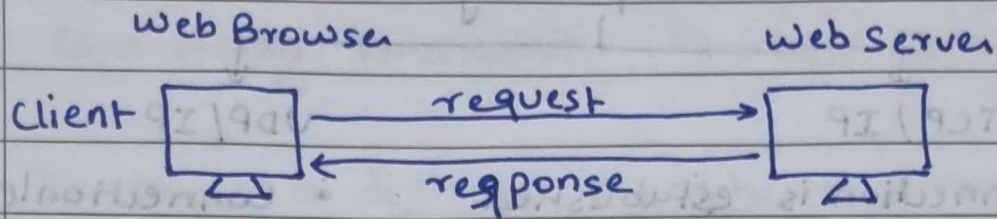
→ We will cover Application Layer and Transport layer from 7 OSI model layers



SMTP: sending the mail

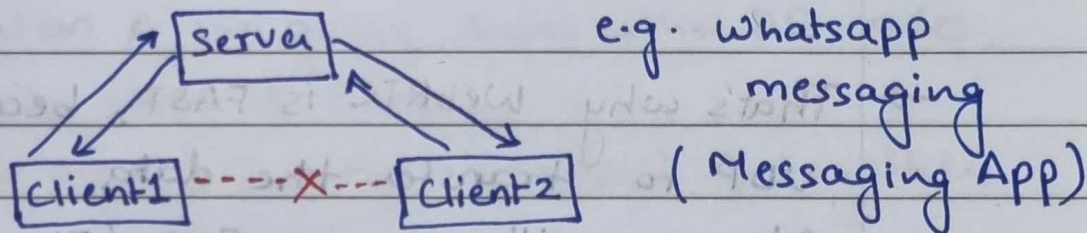
IMAP: read/access the mail

## → Difference b/w Client-Server and Peer to Peer



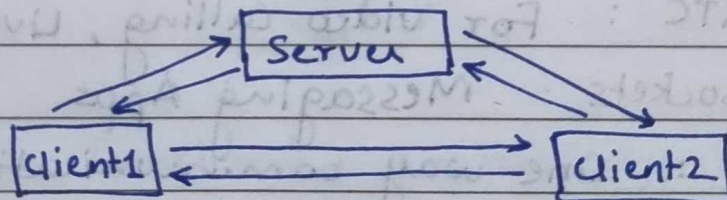
# This is one way communication → client will always initiate and server will give the response  
e.g. HTTP, FTP, SMTP

# But in Web Sockets → we have bi-directional communication (client can talk to server and server can talk to client)



## # Peer to Peer (WebRTC):

Server can talk to client, Client can talk to server and also client can talk to each other



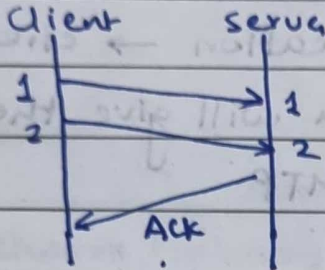
• WebRTC is fast as compared to Client-Server Protocols.



## → Transport Layer

TCP/IP

- Connection is established

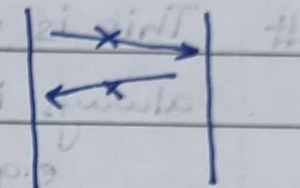


Slow as compared

to UDP

UDP/IP

- Connectionless



no ordering,

FAST (no ACK)

e.g. Video Calling, LIVE Streaming

→ That's why WebRTC is FAST, because it uses UDP to transfer the data.

→ Also we will not use FTP (File transfer protocol) in most cases because it is not secured

Instead we will use HTTPs

- ① WebRTC : For video calling, Live Streaming
- ② WebSockets : Messaging Apps
- ③ HTTP : One way communication
- ④ HTTPs : Secured communication/ Transfer Protocol