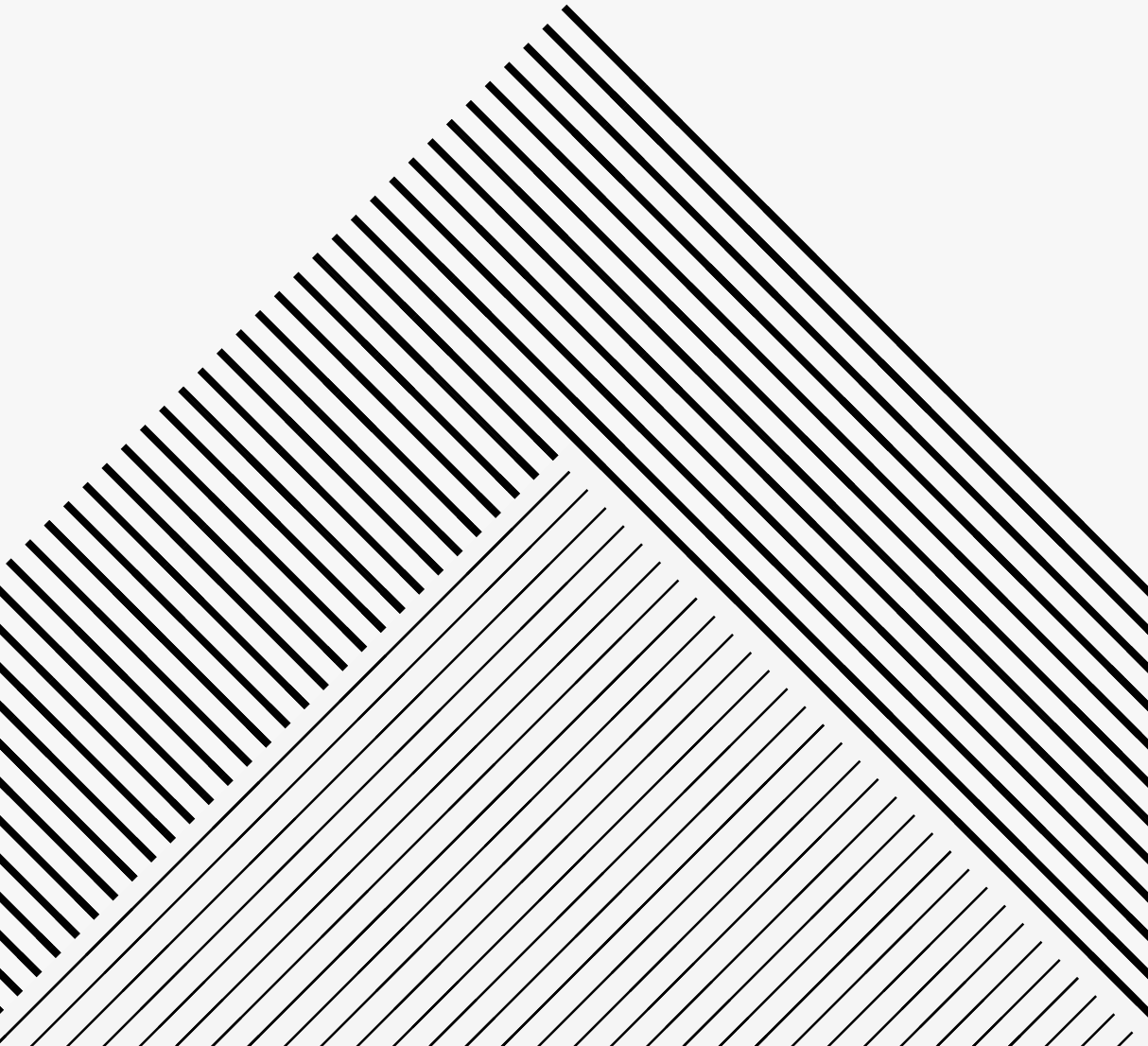
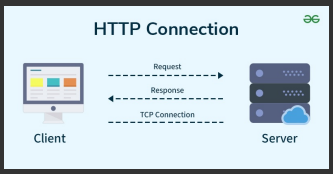


Web Development

- HTTP



- hitesh.ai / cohort - diagram
- Opal • cloify • wakatime • Health
  ↓
  For VS Code

- Hyper linked document

- HTTP (Hyper text transfer protocol)
  - Protocol to transfer
    - Htext
    - → Hyperlinked document
  - Doc 1
  - Doc 2
  - → Human Readable
    - Network tab visibility
    - Inspect element
    - Page source

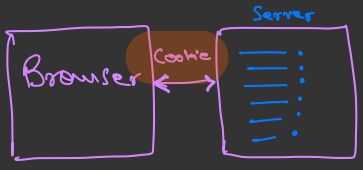
Set of Rules

- Stateless protocol

- **Stateless Protocol**
  - → Every time you visit a page, you are a new user
  - → No memory of previous req. (Har bar naya type)

- Session

- **Session**
  - Stored state between frontend and backend



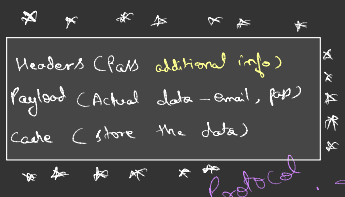
Cookie

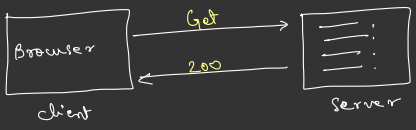
I need to send more info from server to Browser.

HTTP Headers
- ↳ client
  - ↳ Browser info
    - ↳ Date time
    - ↳ Cookie to store

Use cases
e.g. give popup of IOS or android

Request - Response model ← ye model bs fun ke liye likh diya





Protocol

Type of Request [Get, Post, Delete..] (क्रिया)
Response Code [200, 404, 500 ...]
↳ What action to perform Get Post ← Verb
↳ Where to perform http://api.hitesh.ai/auth
↳ Was it done 200, 404...

HTTP

HTTP/2
1. fallback
2. Compression
3. multiplexing
4. encryption

↳ http means http2
↳ http/1.1 is a fallback (alternative) & is still used
↳ Uses Compression
↳ Use multiplexing (Many files at same time)
↳ Uses encryption (https)

In AWS, we don't use http for internal communication
↳ Why? as encryption → cost

Encryption
abc → kyc
real meaning

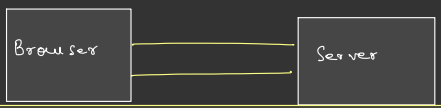
User Agent (Browser)
TCP (Transmission Control Protocol)
FTP (File transfer Protocol)
IP (Internal Protocol)

URL (Uniform resource locator)
DNS (Domain Name System server)
↳ points URL to IP

TLS → transport layer security

we exchange certificate for encryption.

http + TLS = https



Bs itna hi hai pura internet.

↳ setup TCP connection
↳ exchange TLS certificate ← yahi https hota h
↳ send verb + URL + Data + more
↳ Gets the response back with status code & Data (Img, csv, text)
↳ TCP connection is closed (stateless)

(key : value)

→ Both are 2 different concept.

- total nos of port in computer → [0 - 65535]
- Learn about cookie.

high
↑
low →
↑
mid

way to learn in tech

Server ⟷ Client
(jisko req bheje) (jo bhi req bheje)

[Demo side exchange ko skta hai]

Cookie thinking → e.g. netflix if i have basic subs (1 device) if we login in other device other device get logout how?

OTT → (multiple cookie → same user)

They track user agent too. (nos of different devices)

if nos. of devices increases (other one gets logout)

(My Cookie → My website)

Only website that created cookie
↓
only can use that cookie

Data movement ○ ⟷ ○

Model OSI → Open system interconnect (7 layers)

7. Application
6. Presentation
5. Session

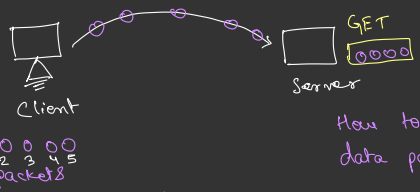
} application layers

4. Transport → TCP / UDP
3. Network layer → routing (shortest path) ip address
2. Data link layer → frames (e.g. TCP, IP)
1. Physical layers - Bits 0 1

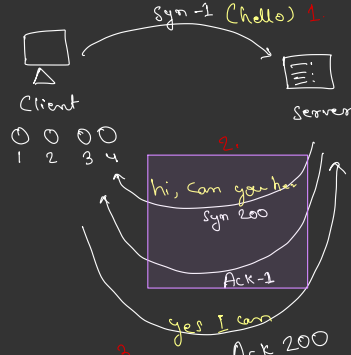
Kuch pane ke liye kuch khona hota hai (trade off).

TCP → transmission control protocol.

→ Reliable, ordered, 3-way handshake



How to make sure all data packets is received.



http → hyperter trans protocol → work on appli layer
put data on transport layer.

1 → 1.1 → 2 → 3

1. HTTP 1 → 0 → 0 3 way sync every time
2. HTTP 1.1 → only one time 3way sync (TCP handshake)
3. HTTP 2 →
4. HTTP 3 → QUIC → UDP

In HTTP 1.1 (one time TCP handshake) → but tradeoff (as TCP insure arrangement of data in sequence & if any data loss it req. for the lost data

Benifit → Data reliability

Trade off
It will take time ~~to~~ do all these

TCP makes sure data packets reached is complete and in correct sequence

e.g. we are design an whatsapp → we want data to be reliable → TCP protocol.

Zoom: A (UDP) → B; Host & panelist; viewers; TCP

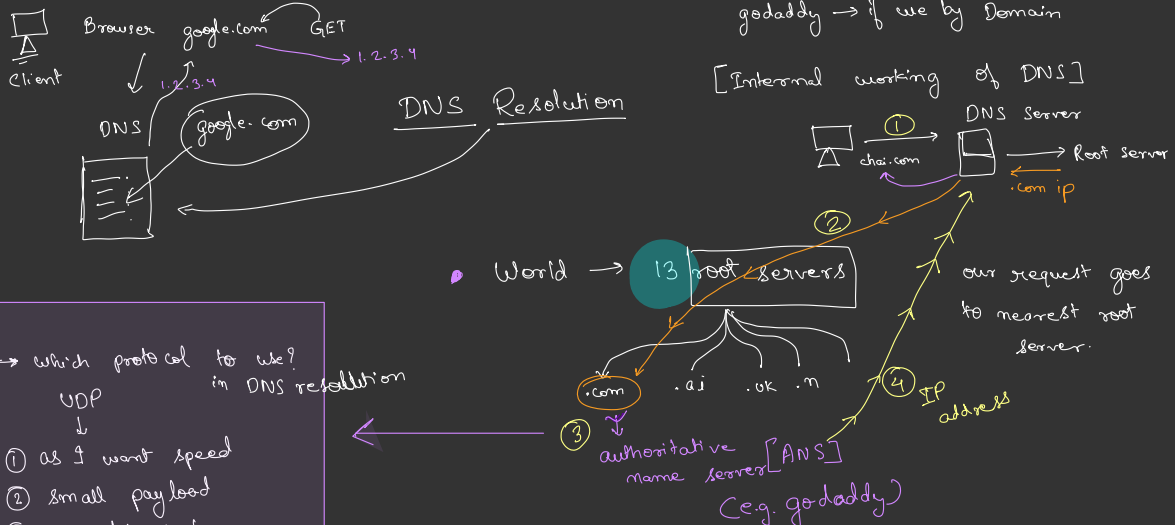
e.g. live chat → we want speed.

UDP

time ↑ Realible ↓

1 2 3 → only 3 data rec

e.g. Cricket (TCP) | video call (UDP) | yt live (TCP)



- TLS handshake
  (Asymetric key)

How a certificate is made?

→ Tunneling, Web hooks

→ Pipliming, Overheads

Internet → vast global network of interconnected computers, servers and devices, world wide
- allows users to share data via standard protocols
- no one owns it → it is decentralized.
- various services e.g. WWW, Email, Online gaming

- Internet is physical infra (cables, routers, servers)

WWW → service (HTTP, HTML, URL) → which can be accessed via browser.

Q How data is transferred?

→ Data broken to packets → labelled with source and destination addresses → Packets travelled via multiple routers → Packets assembled at destination

Key protocol used → TCP/IP / UDP / (HTTP/HTTPS)

Q IP address, Domain names and Routing?

→ IP address → unique identifier given to each device.
So that device communicate with each other.

IPv4 → uses 32 bits address → limited to 4.3 Billions users.

IPv6 → uses 128 bits address → unlimited users.

Domain name → IP address are very hard to remember, therefore

Routing → Routing is the process of determining the best path for data to travel source to destination.

- Routing tables → store information about network paths.
- Protocol like BGP (Border Gateway Protocol) → helps routers to communicate and finder the best route for data packets.