

Understanding Computer Ports & Communication Endpoints

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1. Computer Ports Kya Hote Hain?

Suno! Jab hum internet chalate hain, to hamara computer bohot saari alag-alag cheezein ek sath kar raha hota hai. Ek taraf YouTube par video chal rahi hoti hai, doosri taraf WhatsApp par message aa raha hota hai, aur teesri taraf koi file download ho rahi hoti hai.

Ab socho, internet se jo data aa raha hai, computer ko kaise pata chalta hai ke YouTube wala data kaun sa hai aur WhatsApp wala kaun sa? Wo data aapas mein mix kyun nahi hota? Ye saara jaadoo **Ports** ki wajah se hota hai!

Hotel Wali Super Easy Misaal:

Socho Lahore mein ek bohot badi building ya hotel hai. Us hotel ka ek hi main address (IP Address) hai. Agar koi courier wala hotel ke baahar khada ho, to wo poore hotel ko parcel nahi de sakta. Use parcel dene ke liye kisi specific **Room Number** par jana hoga.

Networking ki duniya mein aap ka computer wo **Hotel** hai, computer ka online address **IP Address** hai, aur us hotel ke andar jo alag-alag **Room Numbers** hain, unhe hum **Ports** kehte hain! Har room (port) ka apna ek alag kaam hota hai.

2. Communication Endpoints Kya Hain?

Networking mein ek word use hota hai jise **Endpoint** kehte hain. Endpoint ka matlab hai "Aakhri Stop" jahan data ne pohncna hai. Jab hum ek **IP Address** (Computer ka address) aur ek **Port Number** (Kamre ka number) ko aapas mein mila dete hain, to ek perfect address banta hai jise hum Endpoint ya **Socket** kehte hain.

Jaise: **192.168.1.1:80**. Isme jo pehla hissa hai wo computer ka rasta hai, aur aakhir mein jo **:80** likha hai, wo port ka number hai.

3. The Big Three Ports (Port 80, 443, aur 22)

Computer mein total **65,535** ports hoti hain! Lekin cyber security aur networking ke students ke liye kuch ports sab se zyaada zaroori hoti hain. Chalo in teeno ko bilkul asan zabaan mein samajhte hain:

Port 80: HTTP (The Unsecured Website Gate)

Jab bhi aap internet par koi aam website kholte ho, to aap ka computer us website ke server se **Port 80** ke zariye baat karta hai. HTTP ka matlab hai HyperText Transfer Protocol.

Bachon Wali Misaal: Yeh ek aesa rasta hai jahan data khule aam jata hai, koi security nahi hoti. Agar koi hacker beech mein baitha ho, to wo aap ka data (jaise passwords) asani se dekh sakta hai. Aaj kal log is port ko zyaada use nahi karte kyunki yeh safe nahi hai.

Port 443: HTTPS (The Secured Safe Gate)

Jab aap Google, Facebook, ya apni GitHub portfolio website kholte hain, to unke address ke shuru mein ek chota sa ****Lock (Taala)**** bana hota hai. Wo websites **Port 443** use karti hain, jise HTTPS kehte hain (S ka matlab hai Secure).

Bachon Wali Misaal: Is kamre (port) ke andar jo bhi data jata hai, wo ek mazboot tijori mein band ho kar jata hai (Encryption). Agar koi hacker beech mein se data chura bhi le, to use samajh nahi aayega ke andar kya likha hai. Yeh internet ka sab se safe rasta hai.

Port 22: SSH (The Remote Control Key)

Cyber security mein sab se mazedaar port **Port 22** hai, jise ****SSH (Secure Shell)**** kehte hain. Socho aap Lahore mein baithe ho aur aap ka ek server ya computer America mein chal raha hai. Aap apne ghar baithe Terminal se America wale computer ko poora remote control karna chahte ho, to aap Port 22 ka rasta use karoge.

Bachon Wali Misaal: Yeh ek jaadooii tunnel hai. Aap apne terminal par command likhoge, wo Port 22 se hoti hui doosre computer par jayegi aur wahan kaam kar degi. Is raste par bohot sakht security aur passwords lagaye jate hain taake koi aur hacker aap ka computer control na kar sake.

4. Quick Summary Table for Revision

Imtehan (Exams) ke liye yeh chota sa table yaad rakhna bohot zaroori hai:

Port Number	Protocol Name	Asan Matlab (What it does?)	Security Level
22	SSH (Secure Shell)	Doosre computer ko terminal se remote control karna.	● High Security
80	HTTP	Normal websites kholna (Khula rasta).	● No Security (Unsafe)
443	HTTPS	Secure websites kholna (Tijori wala rasta).	● High Security (Safe)