Q What is Transmission Control Protocol?

TCP

TCP stands for Transmission control protocol. It is a transport layer protocol that is used to send data over a network. TCP is slower than UDP because it sends acknowledgment signal on recieving data packets.

Connection Establishment & Connection Termination using 3-way handshake

The process of communication between devices over internet happens using TCP/IP protocol.
In TCP/IP protocol model, the application layer is the top layer in which applications that uses internets like web browser, from the client-side, establishes a connection between client and server.
From application layer, the data is transferred to transport layer. Transport layer uses two protocols TCP or UDP.
Mostly TCP is used as it is more reliable for connection establishment and error correction.

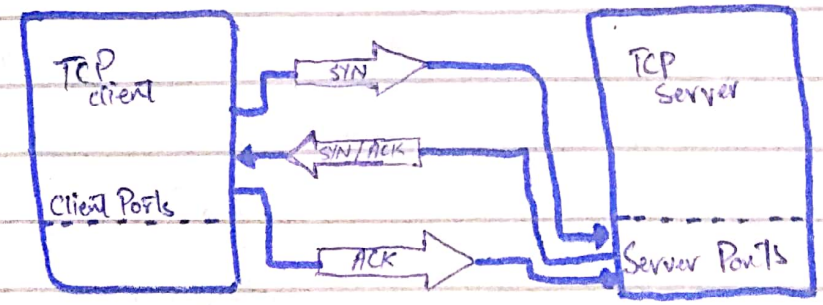
TCP provides reliable communication with a protocol called **Postive Acknowledgm with re-Transmission (PAR)**.

=> The data segment in TCP is called (PDU) protocol data unit.

=> A device using (PAR) resends the data until it recieves an acknowledgment signal.

=> If the data segment recieved at the reciever's end is damaged, the reciever discards the segment.

=> So the sender has to send the data unit for which the positive acknowledgment is not recieved.



Step 1 (SYN): in first step, in order to establish connection with the server, client sends a data segment with SYN (Synchronize Sequence No which informs the server that client is likely to establish connection with what sequence number.

Step 2 (SYN + ACK):

Server responds the client request with SYN + ACK signal bit sets.
=> Acknowledgment (ACK) shows the response of the segment it recieved. ~~and~~
=> Synchronize sequence Number (SYN) shows that with what sequence number, the server is likely to start segment with.

Step 3 (ACK):

In final step, client acknowledges the response of the server and they both establishes a reliable connection with which they will start the actual data transfa.