Network protocols are rules based what two systems can communicate with each other over the network

There are 7 network layers

Network of presentation layer can be divided on two parts (client server network and peer to peer network)

Client server network are http, ftp, smtp and web socket

Peer to peer network is webRTC

In client server generally the communication is unidirectional (except web socket). Client initiate the communication. Web browser is client and web server is server. Client gives request and the server sends the response.

But in web stock both client and server can communicate with each other. But it is not as same as peer to peer. In web socket client 1 sends request to the server and server gives response to the client 2 and again client 2 sends request to the server and the server sends response to the client 1. But here client 1 and client 2 can not directly communicate with each other. In peer to peer all server and clients can directly communicate with each other. In whatsapp, telegram etc kind of messaging app usually uses web sockets.

Http is hyper text transfer protocol. It has one connection. Through this protocol we can jump from one web page to another web page.

Ftp is file transfer protocol. Here two connections are maintained. One is control connection and another one is data connection. Control connection always maintains communication but data connection connect and disconnects.

Smtp is send mail transfer protocol. It is used with IMAP and POP3. SMTP is used to receive mail and IMAP is used to receive and access mail. POP3 is also used for the same purpose. But it is not used now. Because after reading the mail, the system deletes it in POP3. So, user can not access the mail from multiple device.

Transport layer/ network layer is of two types TCP/IP and UDP/IP.

In TCP/IP, datas are divided into various data packets. Only one virtual connection is maintained. The receiver side maintains the same orderings of the data packets as the sender side. After receiving each data packets receiver sends acknowledgement. If any data packets has not been received then no acknowledgement will be sent. So that data packet will be sent again. Web sockets uses this.

In UDP/IP, there are multiple parallel virtual connections between receiver and sender. Data packets are passed through these connections parallelly. Ordering is not maintained here. As there is parallel transfer of multiple data packets so it is faster. There is no acknowledgement. So some data packets can be lost. It is used by WebRTC. It is used in live streaming platformed where data lost is not a big issue. If one portion of live streaming is lost, live streaming continues from the next portion.

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Questions

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1. Elaborate 7 layers of network

2. Full form of IMAP, POP3, TCP, IP, UDP

3. When is FTP used?

4. How FTP works?