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miind r.modi
FON

8-3-21

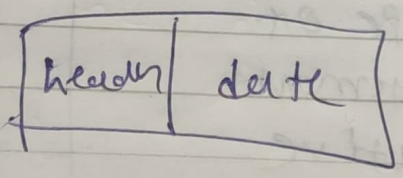
Q.

Go-Back-N-Protocol	Selective repeat protocol
-> If sent frame are find malicious then all the frames are re-transmitted from the lost packet	Only those frame are retransmitted which are lost ~~or has been modified~~.
-> Go back N protocol is is less complex	Selective Repeat Protocol is more complex
-> In this type of acknowledgement is cummlative	In this acknowledgement is frame by frame which means individual.
-> ~~Neither~~ Sender nor receiver do not required any sorting on frames	Receiver side needs sorting to sort the frames.

Q. Explain Packet Switching

Packet switching is transferring data digitally from one node to other node by dividing data in to the packets and these packets travell through the network. ~~and~~ ~~packet~~ independtly and reach to the destinition and merging takes the place on this packets.

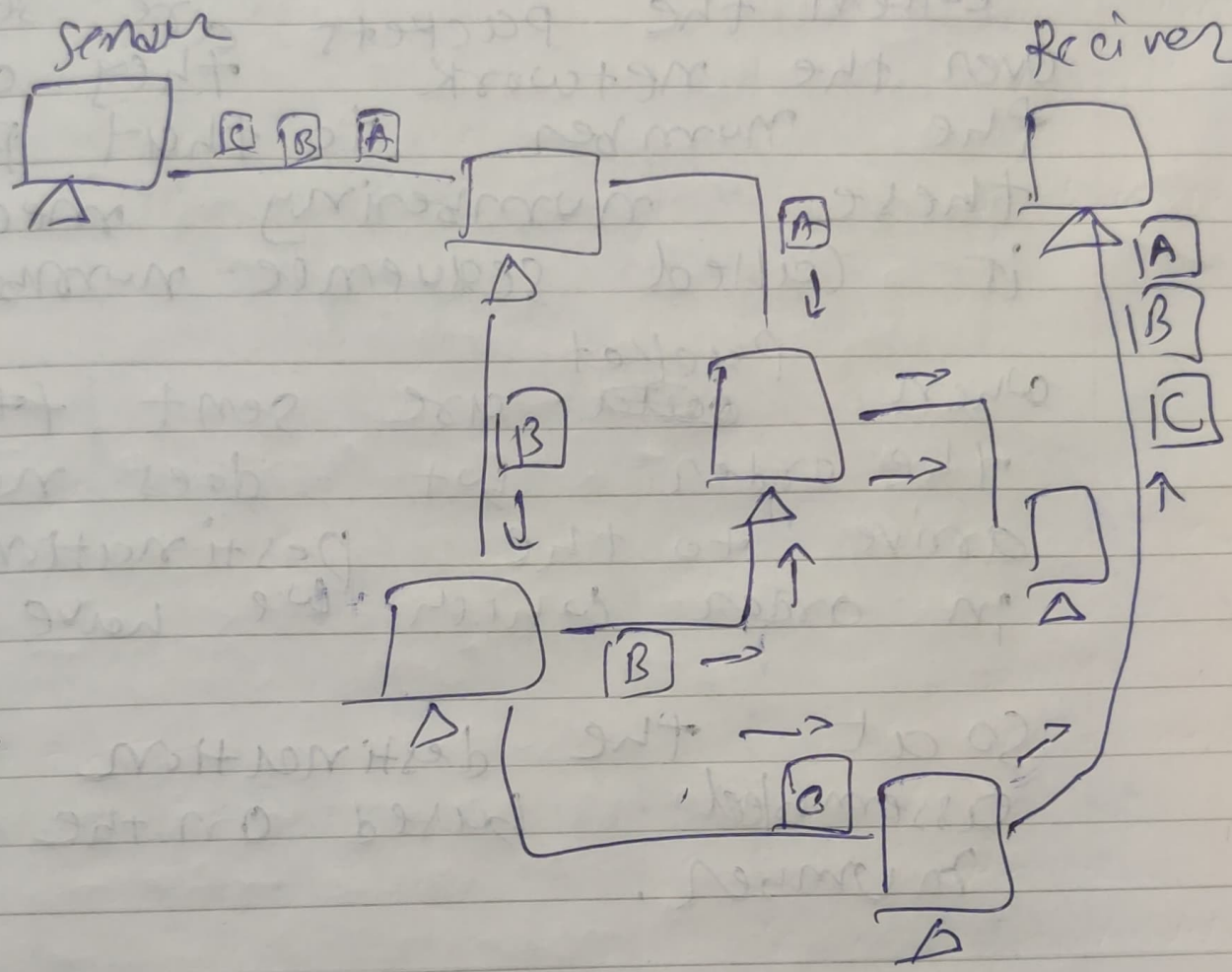
Packets are divided into two sections



header contains 1) destination address
2) number of packet
3) total number of pck
4) source address.

In this header and data will be sent on the network and after that

if data sent through TCP/UDP will decide the path of the packets over internet.



Q Discuss about.

Seqvence number :-

when the packets are sent over the network they attech the number to that packet these numbering mechnism it called seqvence number.

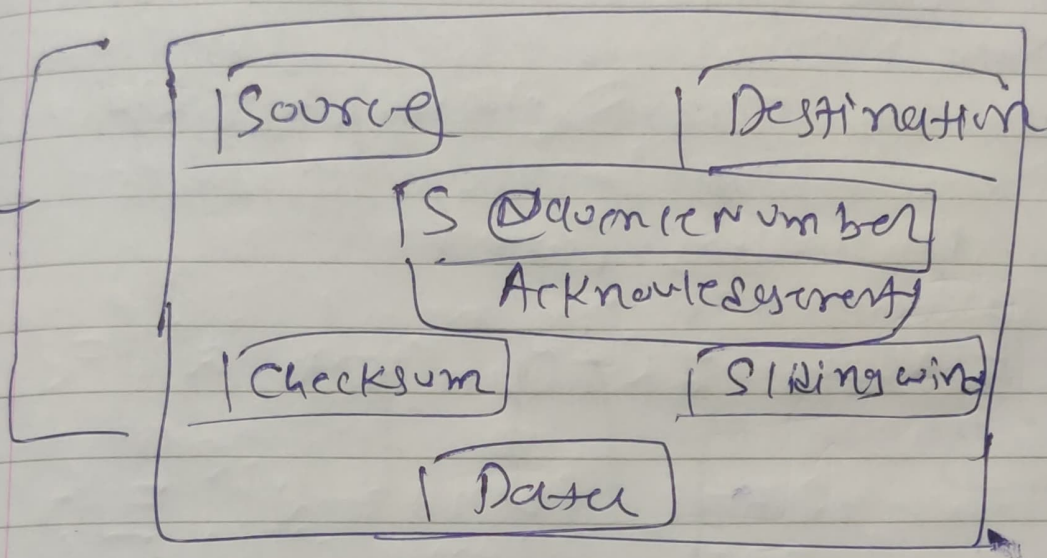
when packet ~~data~~ are sent ~~the~~ in the order but does not arrive to the destination in order which we have sent

so at the destination they assembled based on the seqvence number.

Acknoledgen number

When the packets are sent the reciver Sent number of Recived seqvence number to sender in TCP network

connection, this number is used for it packets are recived successfully or not to the destination,



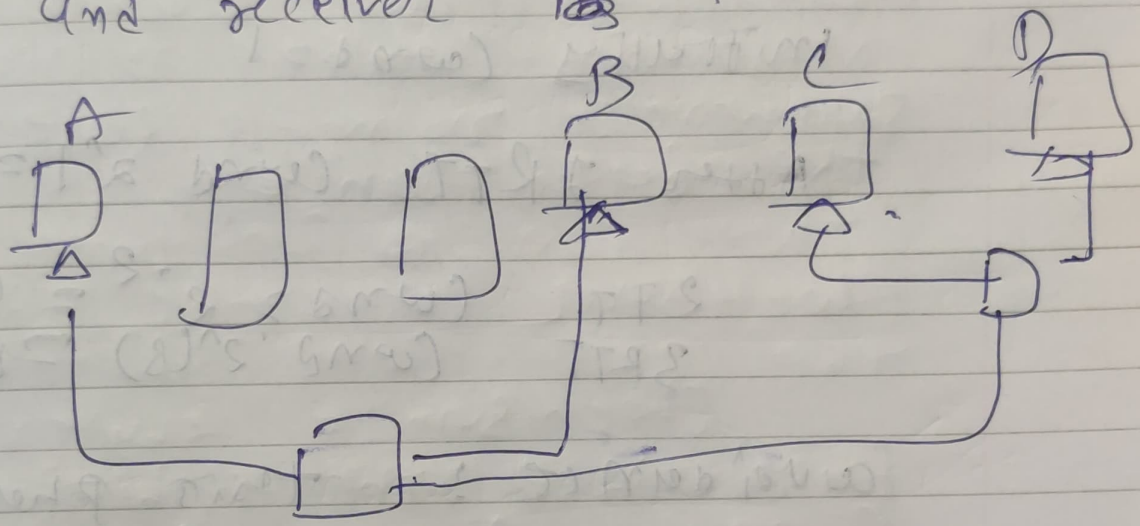
Reddre window field: Indicates how many bytes sender can issue to receiver while acknowledge for this segment.

- Suppose server indicates a siding window size of 200 bytes and client already has issued 200 bytes 150 bytes has recived and ack sent.

that means 350 is still waiting. but there is limit for window. so it waits for ack to recive than it can sent next 1000 bytes.

Q. TCP Congestion Control.

TCP uses congestion window and congestion policy that throttles a sending process when the network is congested b/w sender and receiver.



Congestion Policy in TCP

1) Slow Start Phase: slowly increases the threshold

2) Congestion avoidance phase

3) Congestion Detection Phase.

amount of unacknowledged data at sender may not exceed the minimum of cwnd and rwnd

LastByteSent - LastByteAcked
$\leq \min(cwnd, rwnd)$

Initially cwnd = 1

After 1 RTT cwnd $2^1 = 2$

2 RTT cwnd $2 \cdot 2^1 = 4$
3 RTT cwnd $2^{(3)} = 8$

avoidance : this phase starts after the threshold value denoted ssthresh

cwnd = i

1 RTT = cwnd = i+1
2 RTT = cwnd = i+2
3 RTT cwnd = i+3

Congestion Detection : The congestion window Decreased if congestion occurs. Retransmission occurs in one of two case when the RTO time timer out or when three duplicate ACKs are received.

UDP

Q why checksum

-> UDP : user datagram protocol

UDP is part of internet protocol suit

~~the~~ referred as UDP/IP suit unlike TCP it is unreliable connection less protocol.

So there is no need to establish the data transfer.

Checksum

Checksum is 2 bytes long field it is the 16 bit one's complement of the one's complement sum of the UDP header

Steps for calculation checksum
3 16 bit binary

1) the sender performs 1's complement of the sum.

2) if any overflow occur during sum it being wrap around

2) The result is then put it in the checksum field

eg:

0 1 1 0 0 1 1 0 1 1 0 0 0 0 0 0 — (2)
0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1

1 0 1 1 1 0 1 1 1 0 1 1 0 1 0 1 — (3)
+ 1 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0

1 0 1 0 0 1 0 1 0 1 1 0 0 0 0 1
+ 1

0 1 0 0 1 0 1 0 1 0 0 0 0 1 0

So sum = 0 1 0 0 1 0 1 0 1 1 0 0 0 0 1 0

applying is complement

Checksum = 1 0 1 1 0 1 0 1 0 0 0 1 1 1 1 0 1

Q. wifi router, extender

he/she can use the following devices

1) Repeater
~~2) Router~~

Repeater are used to retransmit the Digital waves

they can Configure the Repeater as the Retransmits the Digital frequencies.

Repeater attempt to preserve Signal integrity and extend the distance over which data can travel

thus he/she can extend Router frequencies by some