

Q1. Write note on ~~ed~~ flow control and error control.

Ans. 1. Flow control:-

- When the sender is running on fast machine or lightly loaded machine and receiver ~~is~~ is on slow or heavily loaded machine. Then the transmitter will transmit frames faster than the receiver can accept them.
- At a certain point the receiver will simply not be able to handle the frames as they arrive and will start to lose some.
- To prevent this, flow control mechanism is incorporated which includes a feedback mechanism requesting transmitter ~~and~~ retransmission of incorrect message block.

2. Error control:-

- To ensure proper sequencing and safe delivery of frames at the destination, an acknowledgement should be sent by the destination network.
- If the sender receives a positive acknowledgement it means the frames has arrived safely.
- If a negative acknowledgement arrives that means, something has gone wrong and the frame is to be retransmitted.

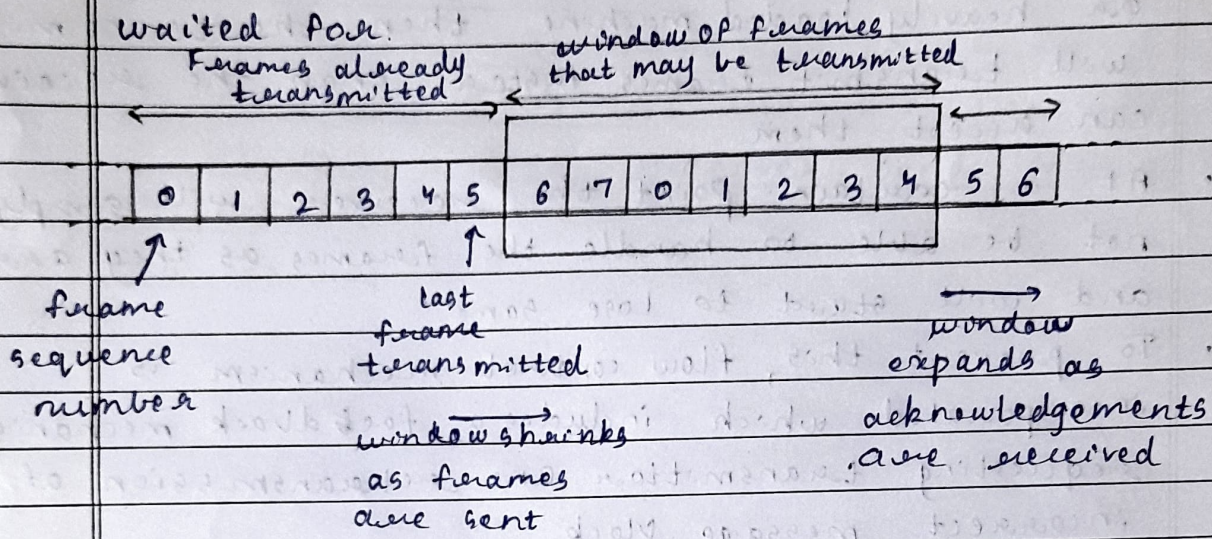
Q2. What is sliding window protocol?

Ans: Sliding windows is one of the methods of error correction.

- To increase the ^{data} rate, this method allows to transmit a specific number of packets, in continuous mode i.e. at a maximum possible rate, without receiving positive acknowledgements for these packets.

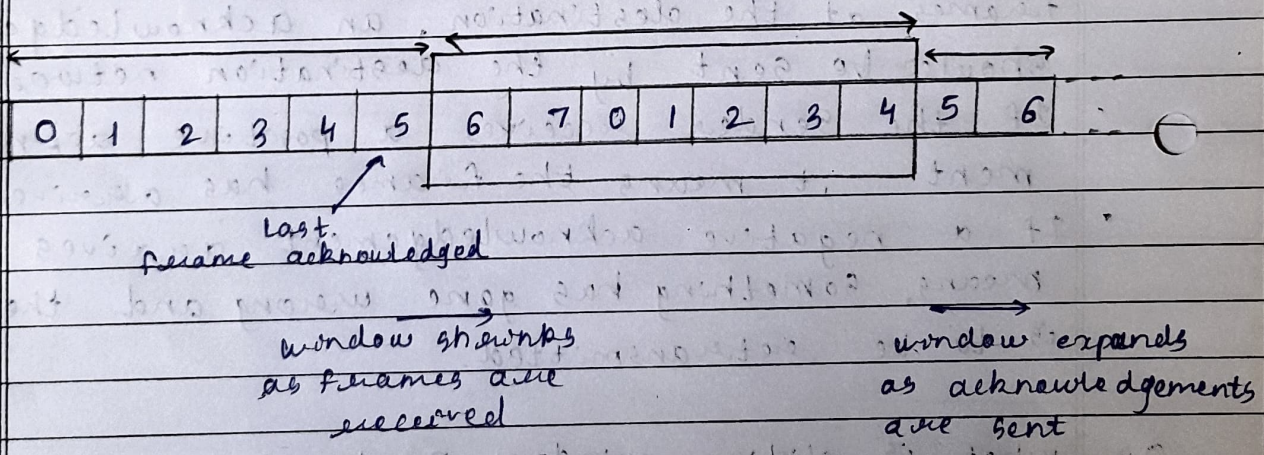
1. Sending window:-

- It is a list of consecutive frame sequence numbers that can be sent by the sender or that have been sent and acknowledgements are waited for.



2. Receiving window:-

- It is a list of sequence numbers for frames that can be accepted by the receiver.



Q3. Explain in brief selective repeat and Go-back-N ARQ.

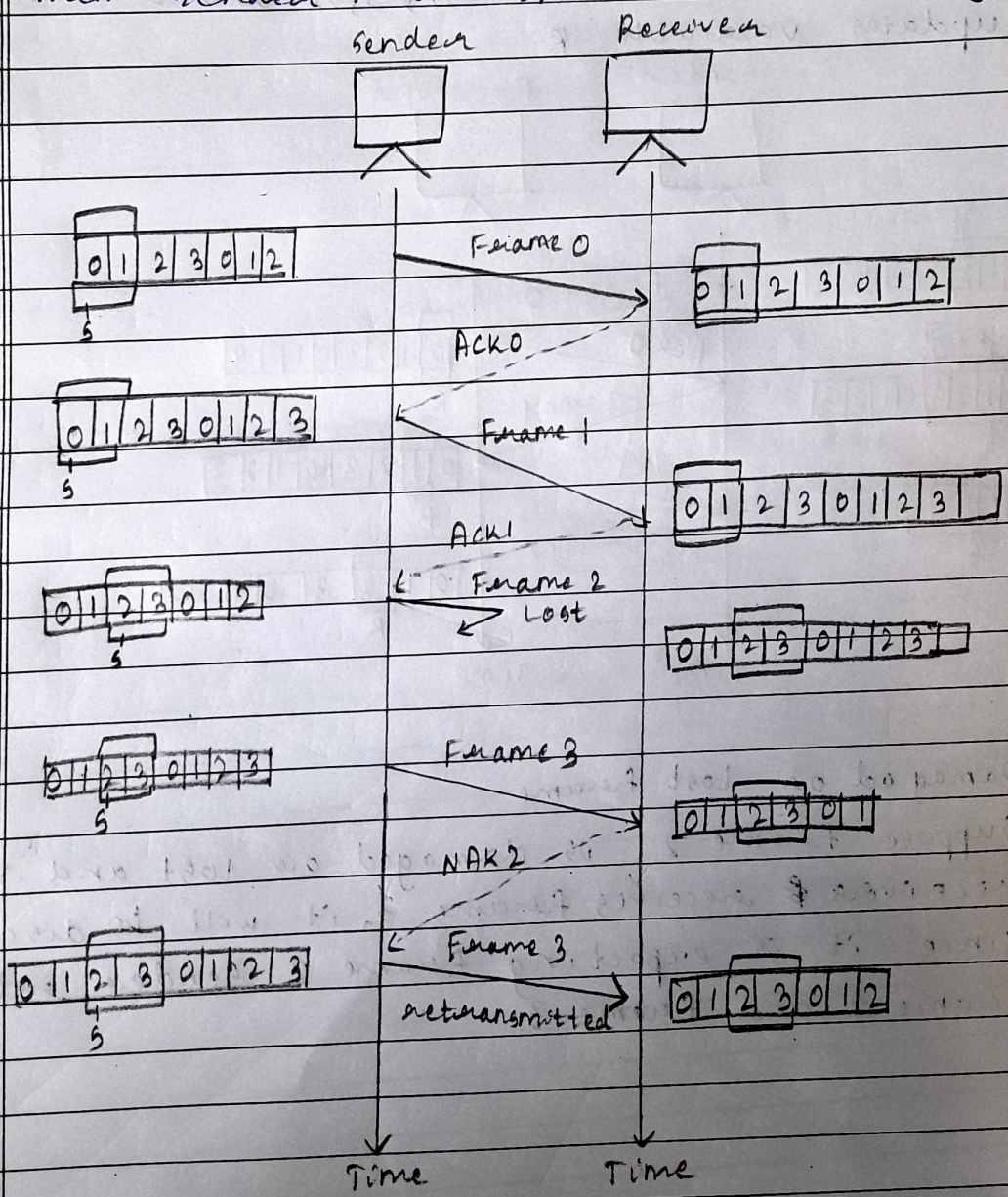
Ans 1. Selective repeat

- selective repeat ARQ retransmits only the damaged or lost frames instead of sending multiple frames.

- The selective retransmission increases the efficiency of transmission and is more suitable for noisy channel.

→ operation:

- In sequential transmission of frame 0, 1, 2, 3 suppose frame 2 is lost and the next frame 3 is already then receiver sends NAK 2 frame to sender.
- Then sender retransmits frame 2 only.



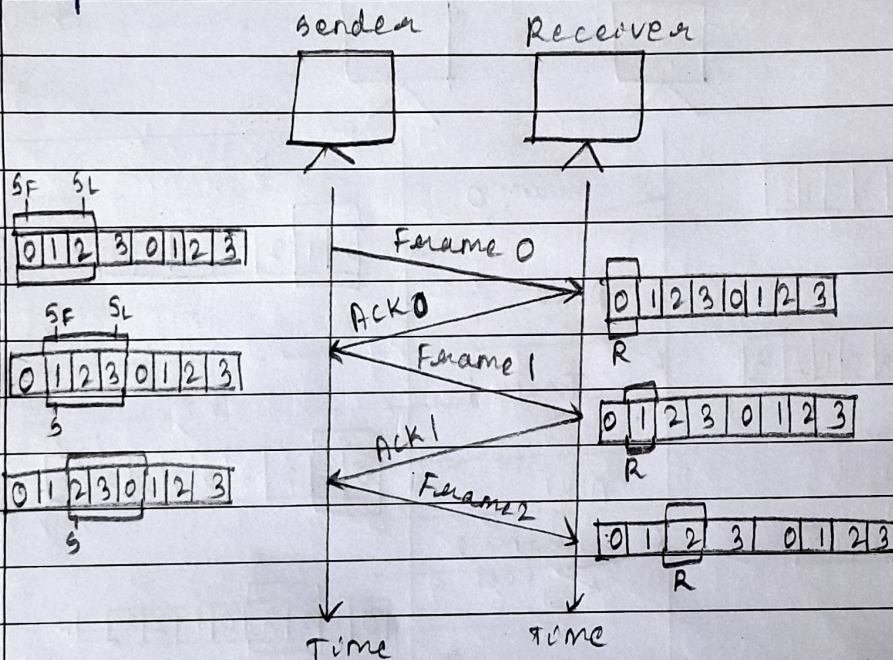
2. Go Back N ARQ

- Go Back N uses the sliding window protocol flow control protocol.
- If no errors occur the operation is similar to sliding window.

→ operation:

a) Normal operation

- The sender sends frames and update the control variables i.e. SF, S, SL and receiver updates variable R.



b) Damaged or lost frame

- Suppose frame 2 is damaged or lost and if receiver receives frame 3, it will be discarded since it is expecting frame 2. Sender retransmits frame 2 and frame 3.

Sender

Receiver

