

Course Name: A Level (2nd Sem)

Subject: DCN

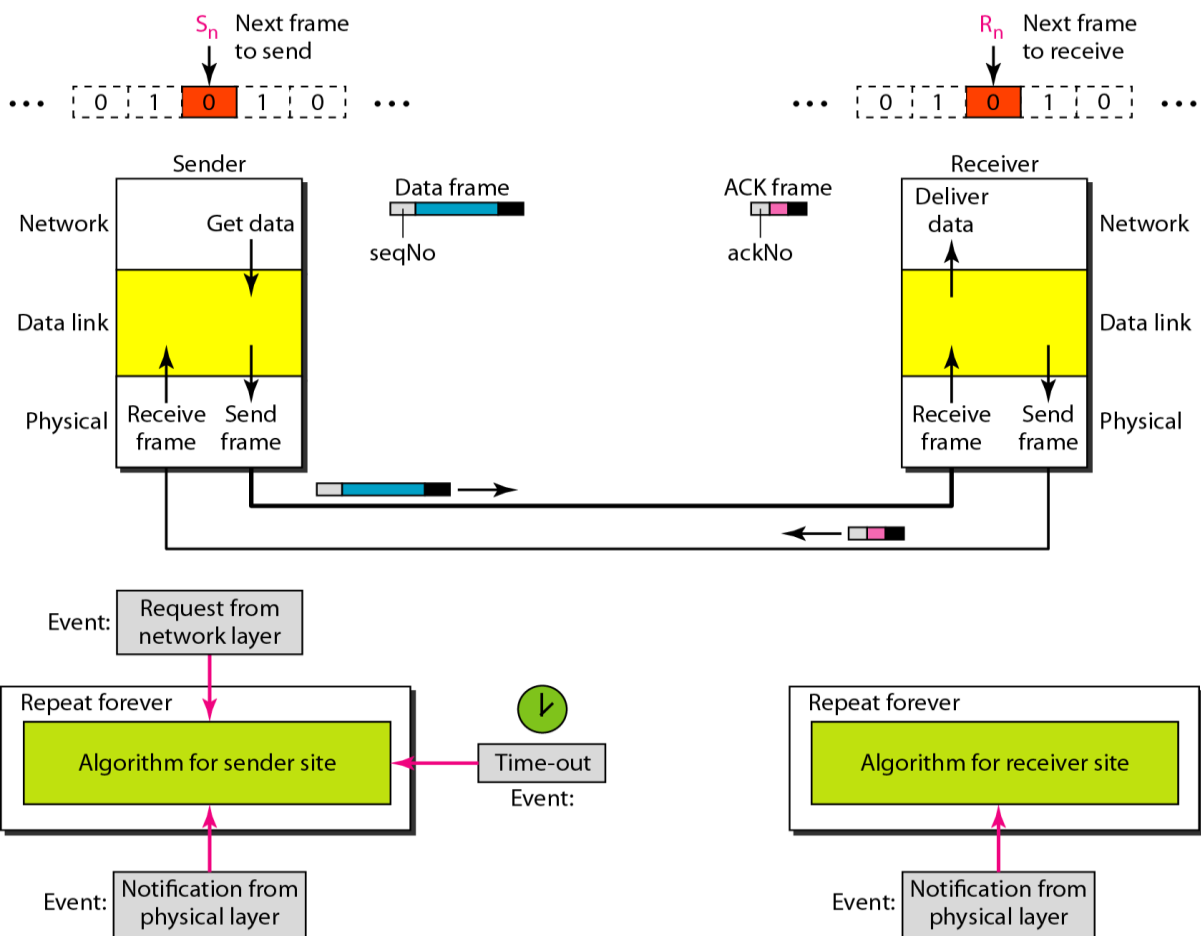
Topic: Stop and Wait ARQ

Date: 03-04-20

Stop and Wait ARQ is the simplest flow and error control mechanism. A transmitter sends a frame then stops and waits for an acknowledgment.

Stop-and-Wait ARQ has the following features:

- The sending device keeps a copy of the sent frame transmitted until it receives an acknowledgment(ACK)
- The sender starts a timer when it sends a frame. If an ACK is not received within an allocated time period, the sender resends it
- Both frames and acknowledgment (ACK) are numbered alternately 0 and 1(two sequence number only)
- This numbering allows for identification of frames in case of duplicate transmission.
- The acknowledgment number defines the number of next expected frame. (frame 0 received ACK 1 is sent)
- A damage or lost frame treated by the same manner by the receiver
- If the receiver detects an error in the received frame, or receives a frame out of order it simply discards the frame
- The receiver sends only positive ACK for frames received safe; it is silent about the frames damage or lost.
- The sender has a control variable S that holds the number of most recently sent frame (0 or 1). The receiver has control variable R, that holds the number of the next frame expected (0, or 1).

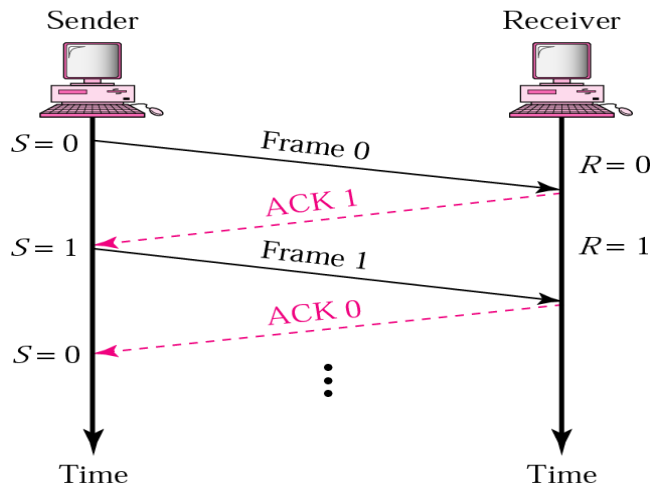


Cases of Operations:

1. Normal operation
2. The frame is lost
3. The Acknowledgment (ACK) is lost
4. The Ack is delayed

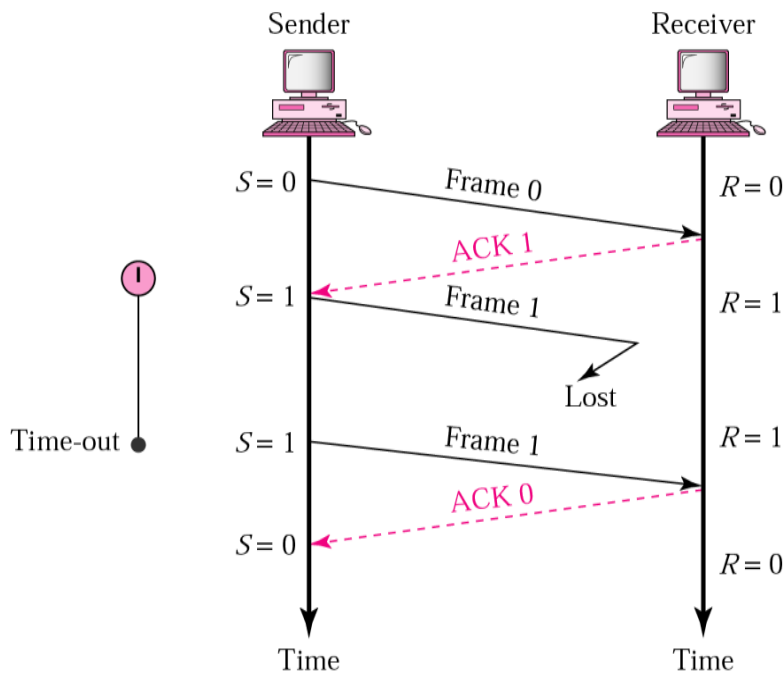
1. Normal operation:

- The sender will not send the next frame until it is sure that the current one is correctly receive.
- Sequence number is necessary to check for duplicated frames.

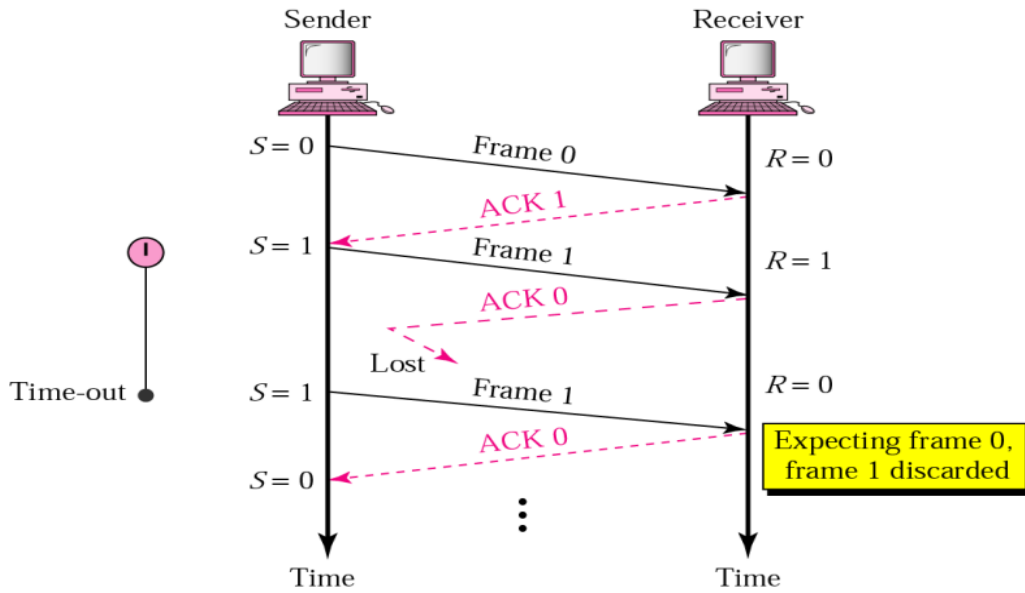


2. Lost or damaged frame:

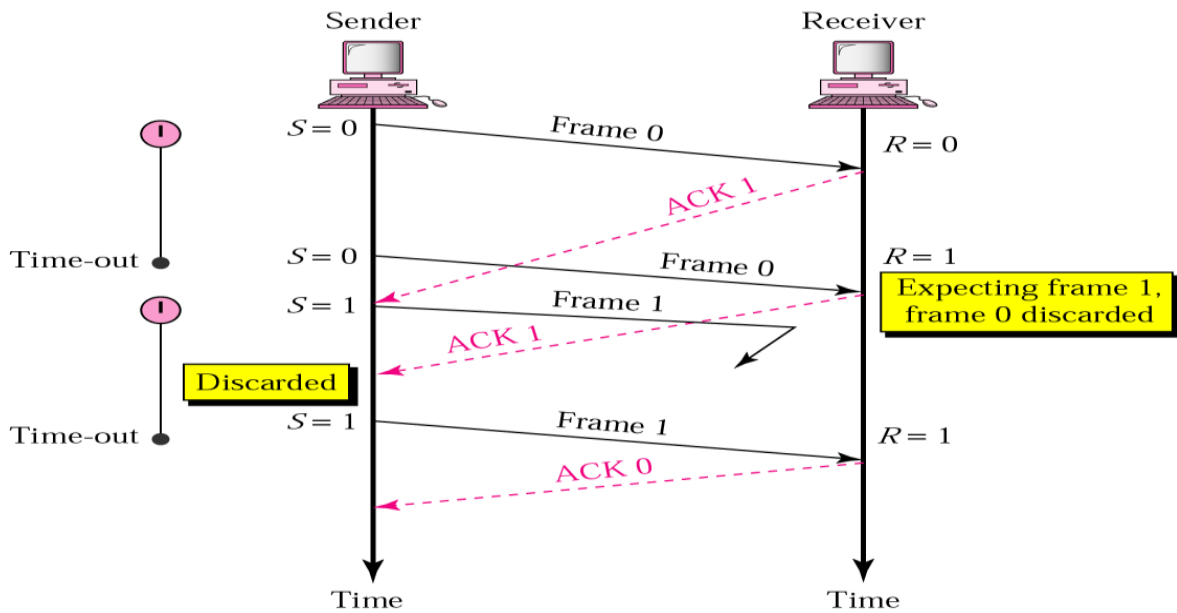
- A damage or lost frame treated by the same manner by the receiver.
- No ACK when frame is corrupted / duplicate



3. Lost ACK frame:



4. Delayed ACK and lost frame:



Exercises:

- A. What do you understand by Stop and Wait ARQ?
- B. Explain the following cases in Stop and Wait ARQ:
 - a) Lost Data Frame
 - b) Lost ACK Frame
 - c) Lost ACK Frame and Lost Data Frame