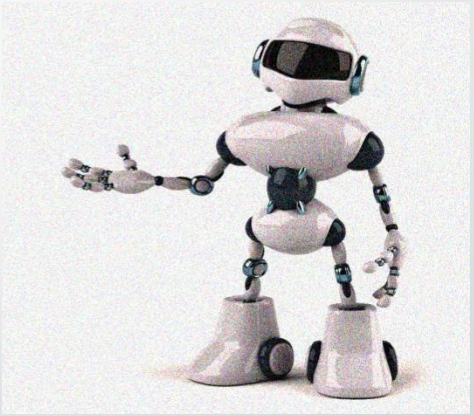
DATA LINK PROTOCOLS FOR NOISY & NOISELESS CHANNELS



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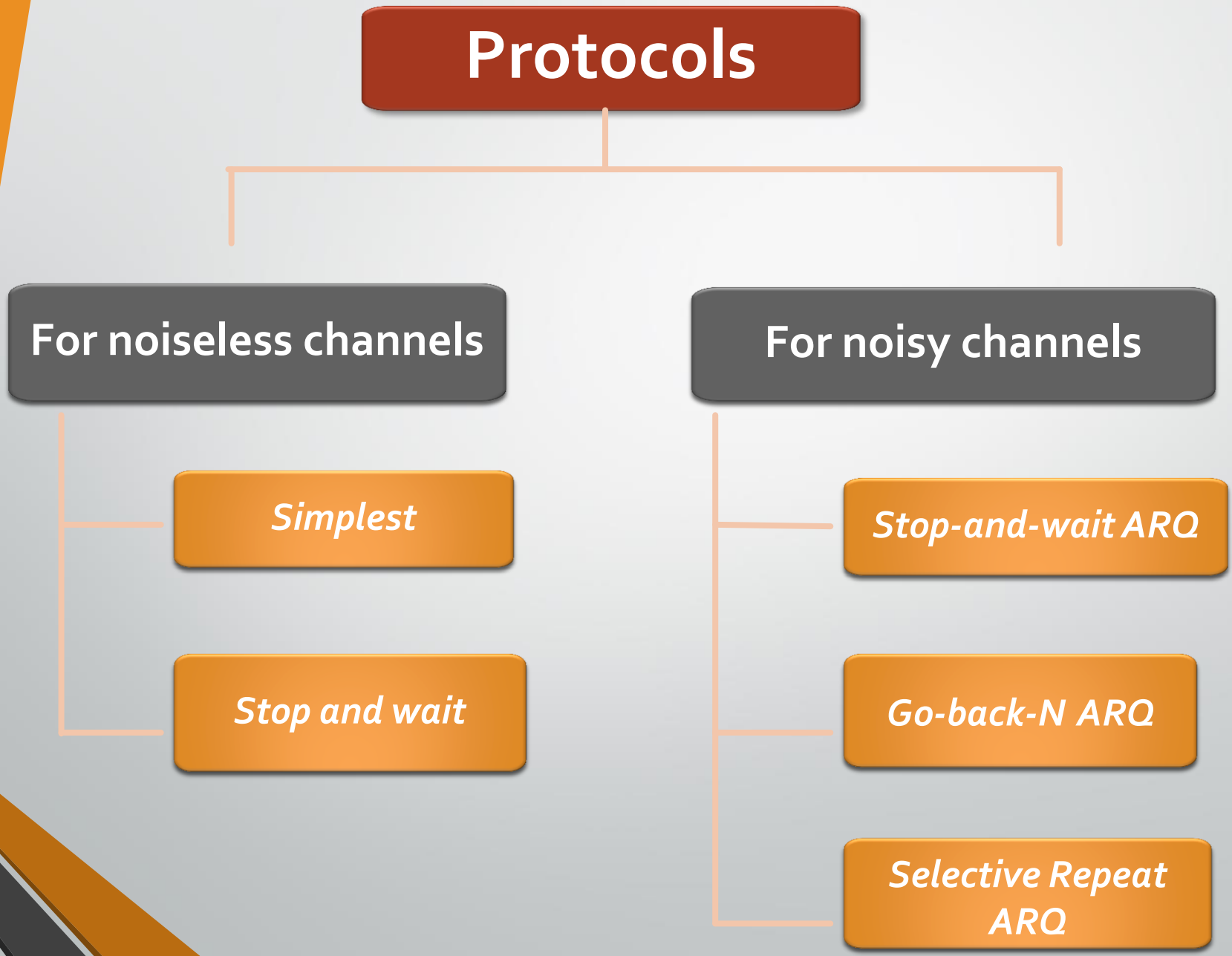

Protocols
For noiseless channels
For noisy channels
Simplest
Stop and wait
Stop-and-wait ARQ
Go-back-N ARQ
Selective Repeat ARQ

NOISELESS CHANNELS

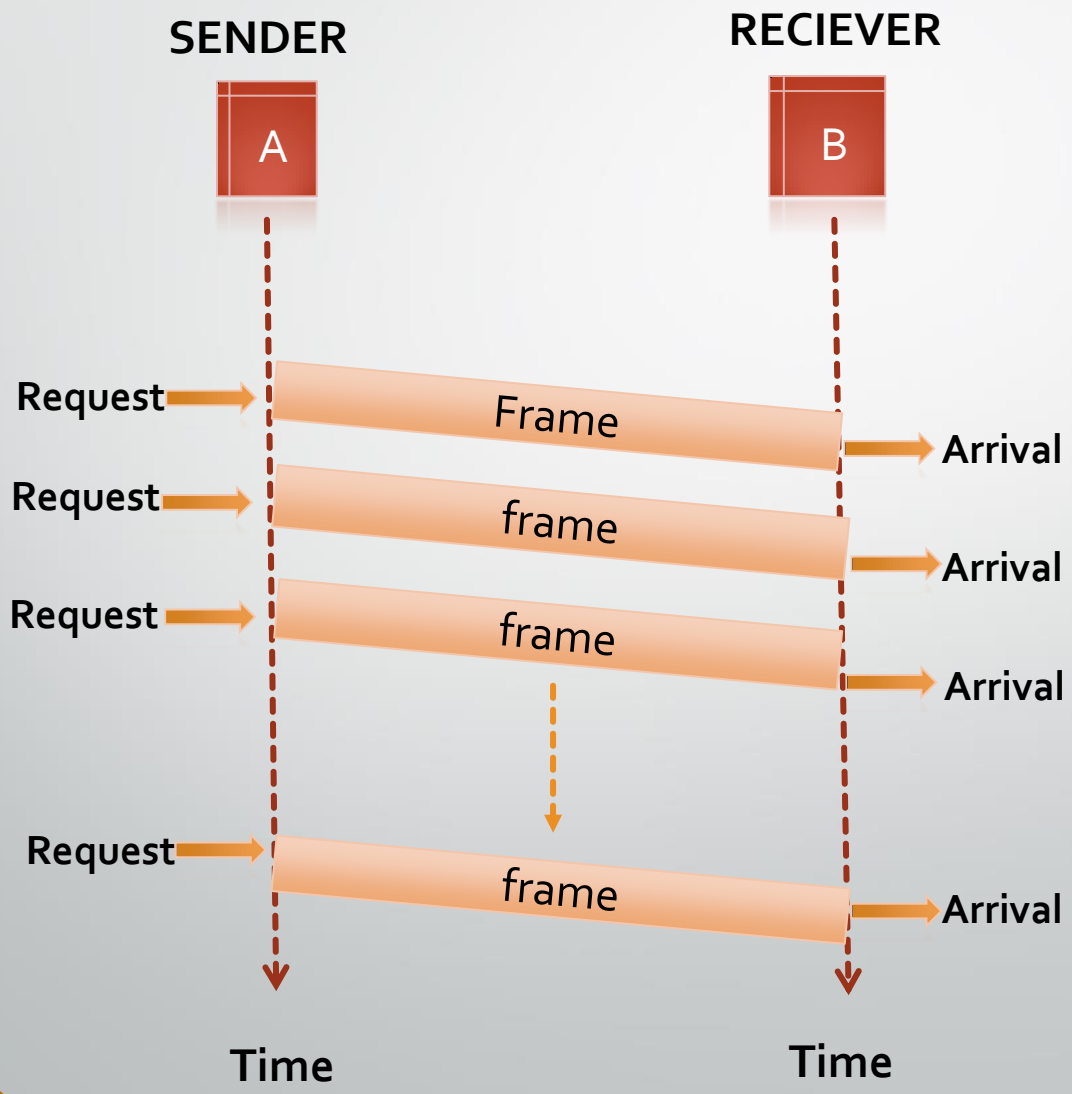
An ideal channel in which no frames are lost, duplicated, or corrupted.

Noiseless channel includes two protocols :-

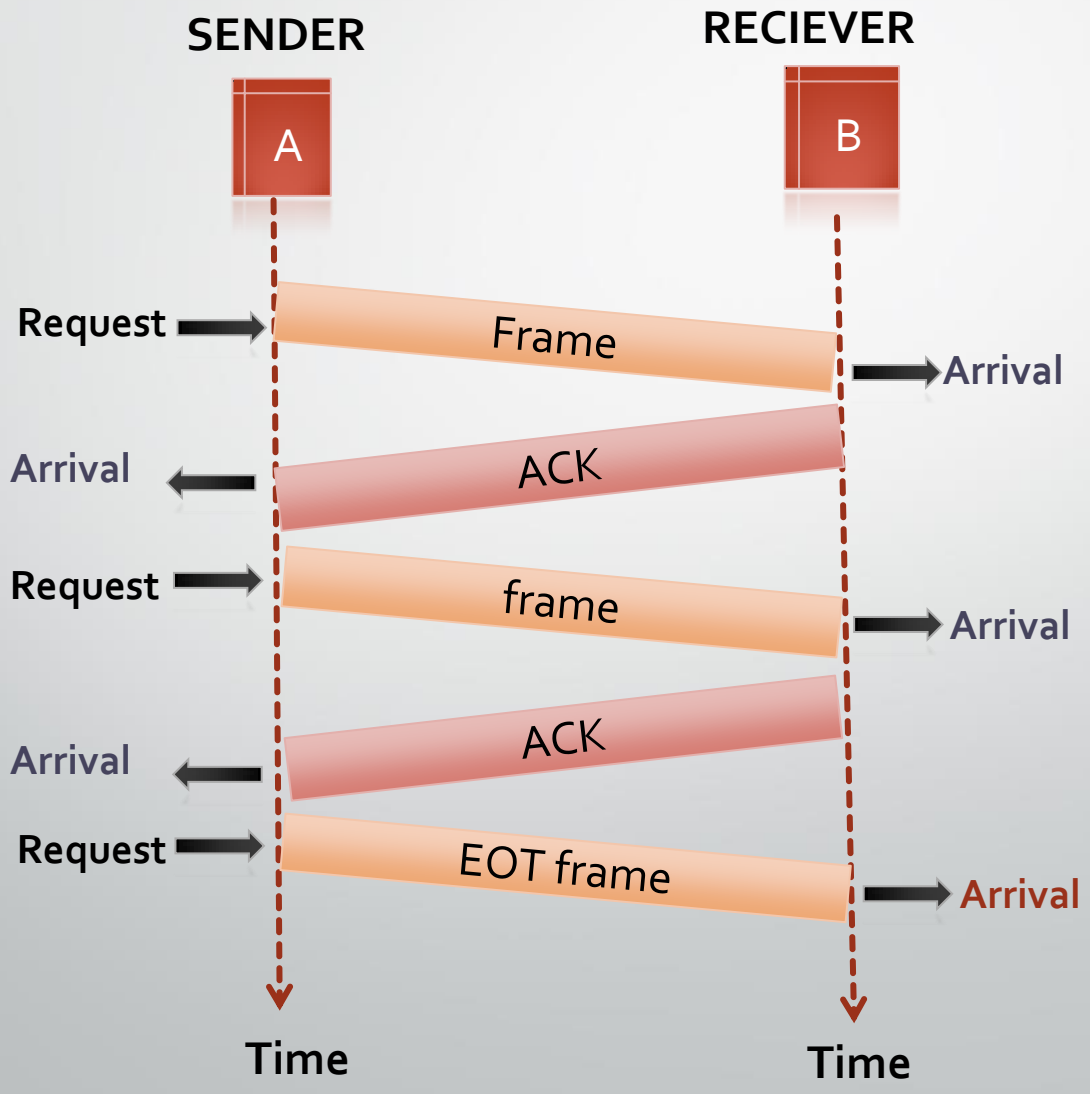
1.Simple protocol

2.Stop-and-wait protocol

Simplest protocol



Stop-And-wait protocol



Noisy channel protocol

- It is the normal real time situation of communication channel in which data frames may be either damaged or lost completely.
- There are three protocols for handling Noisy channels:-

  1. Stop-and-wait ARQ

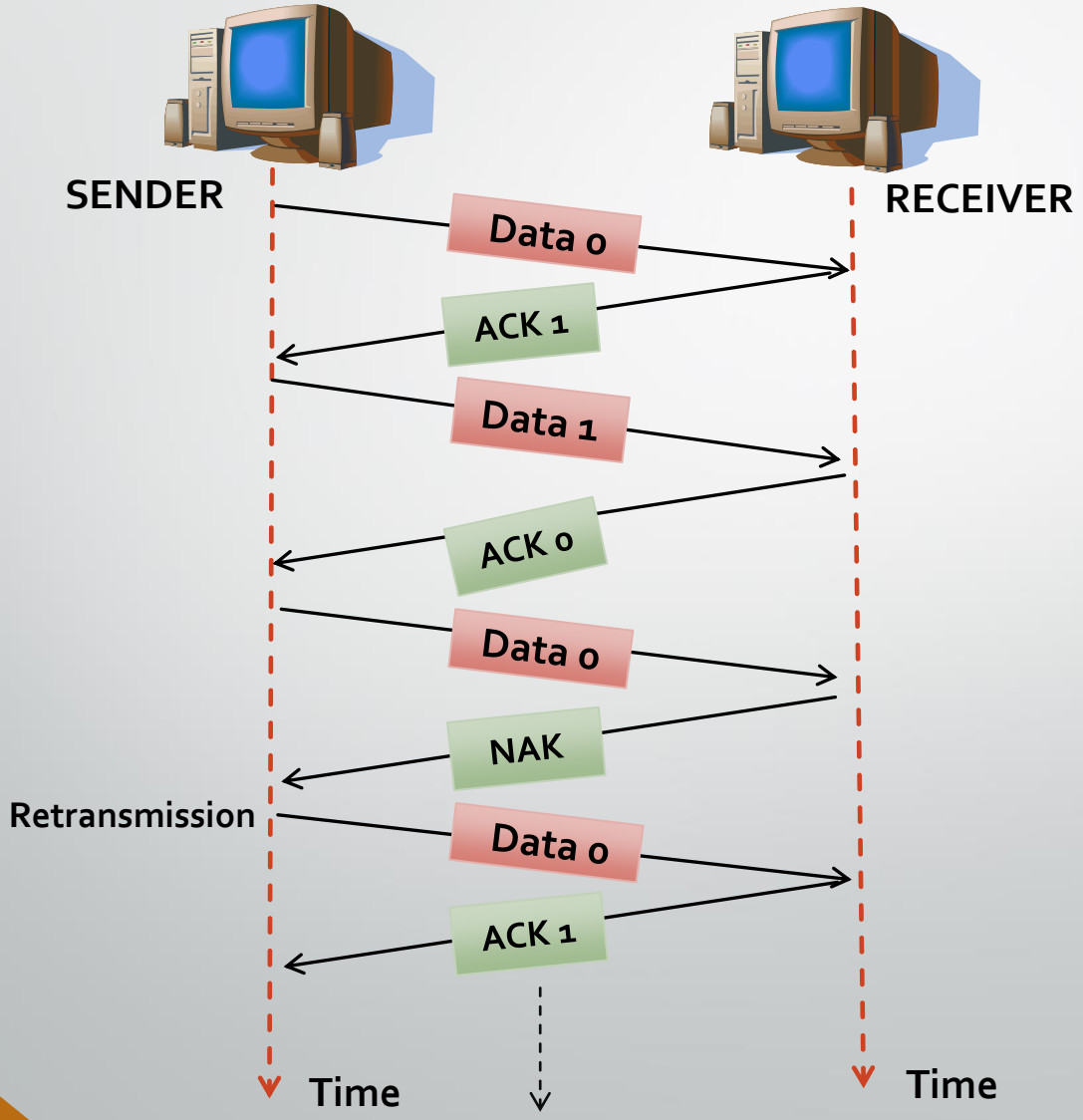
  2. Go-back-N ARQ

  3. Selective Reject ARQ

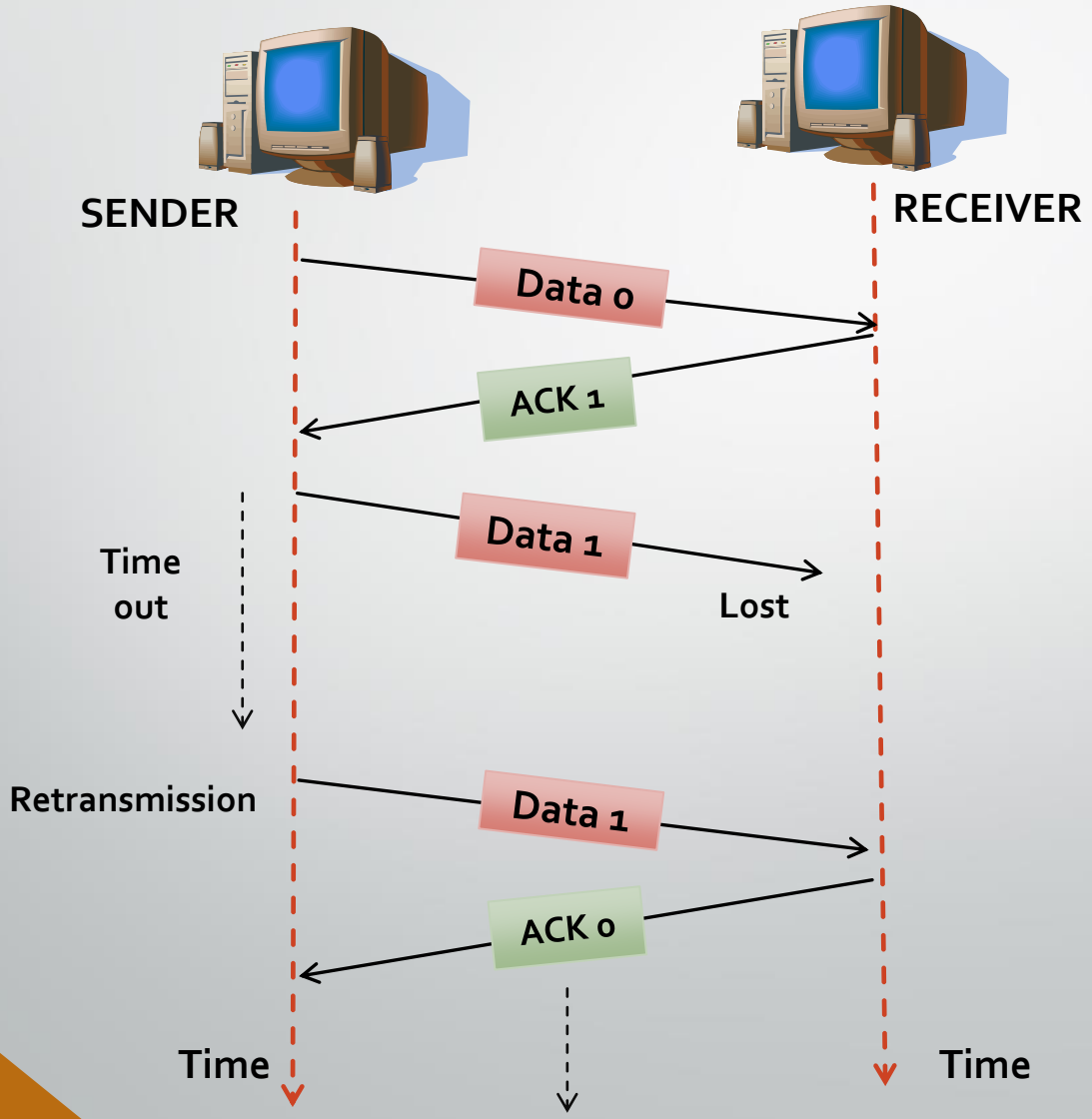
Stop-and-Wait ARQ

- Sending device keeps a copy of last frame transmitted and wait for the acknowledgment
- Both data and ACK frames are numbered alternately 1 and 0 for identification purpose but NAK frames are not
- Sending device is equipped with timer
- It deals with lost or damaged frames and ACK.

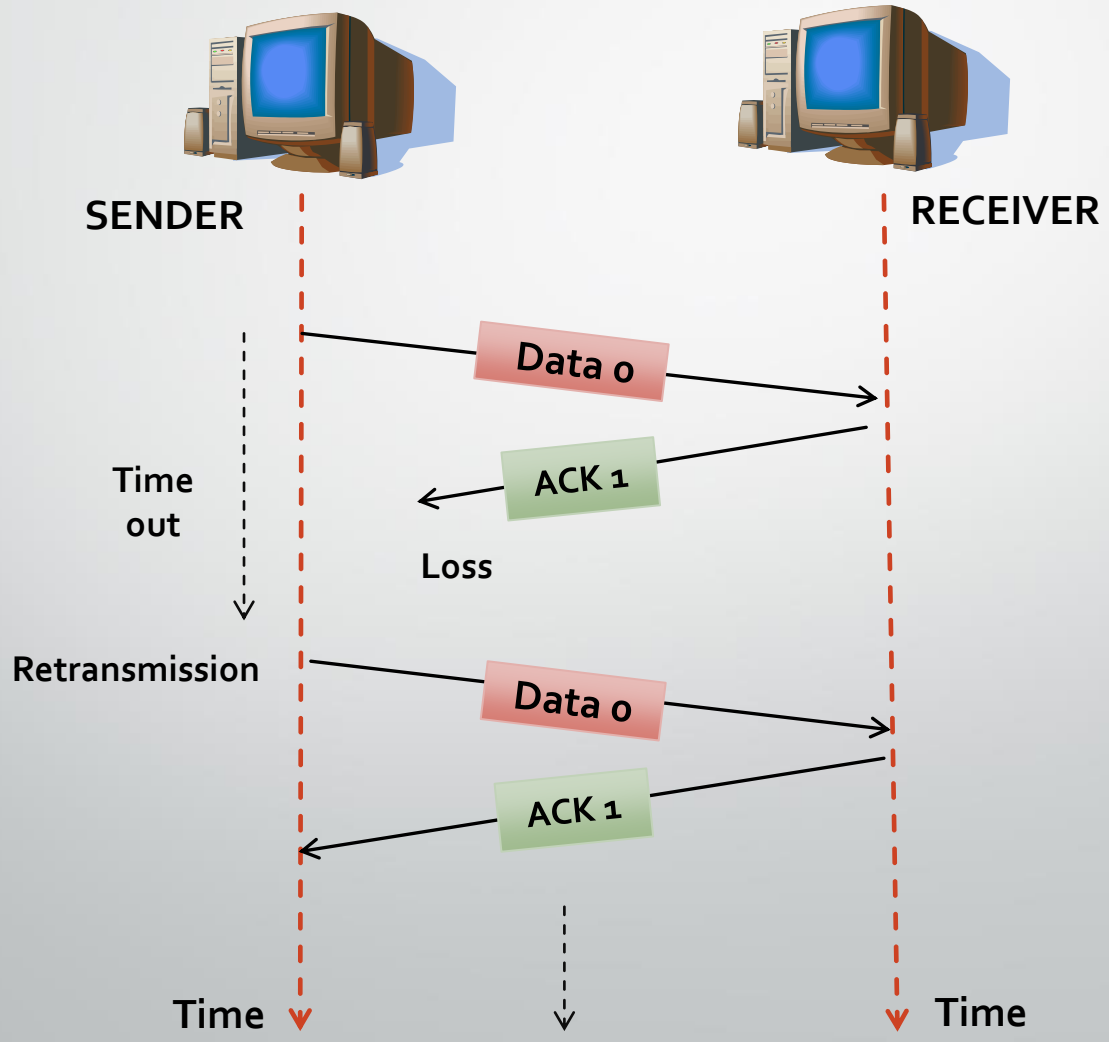
Stop and wait ARQ for Damaged Data frames



Stop and wait ARQ for Lost data frames



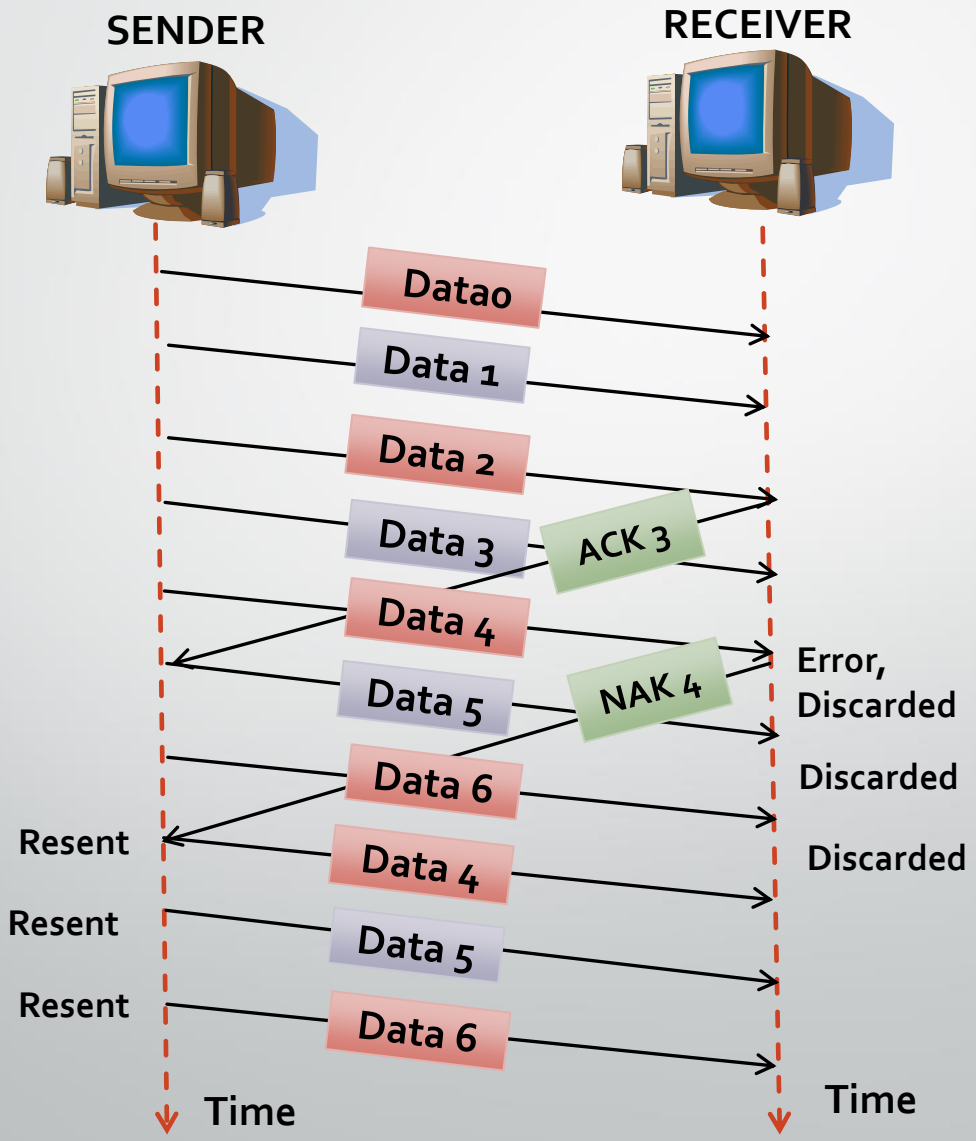
Stop and wait ARQ for Lost acknowledgment frame



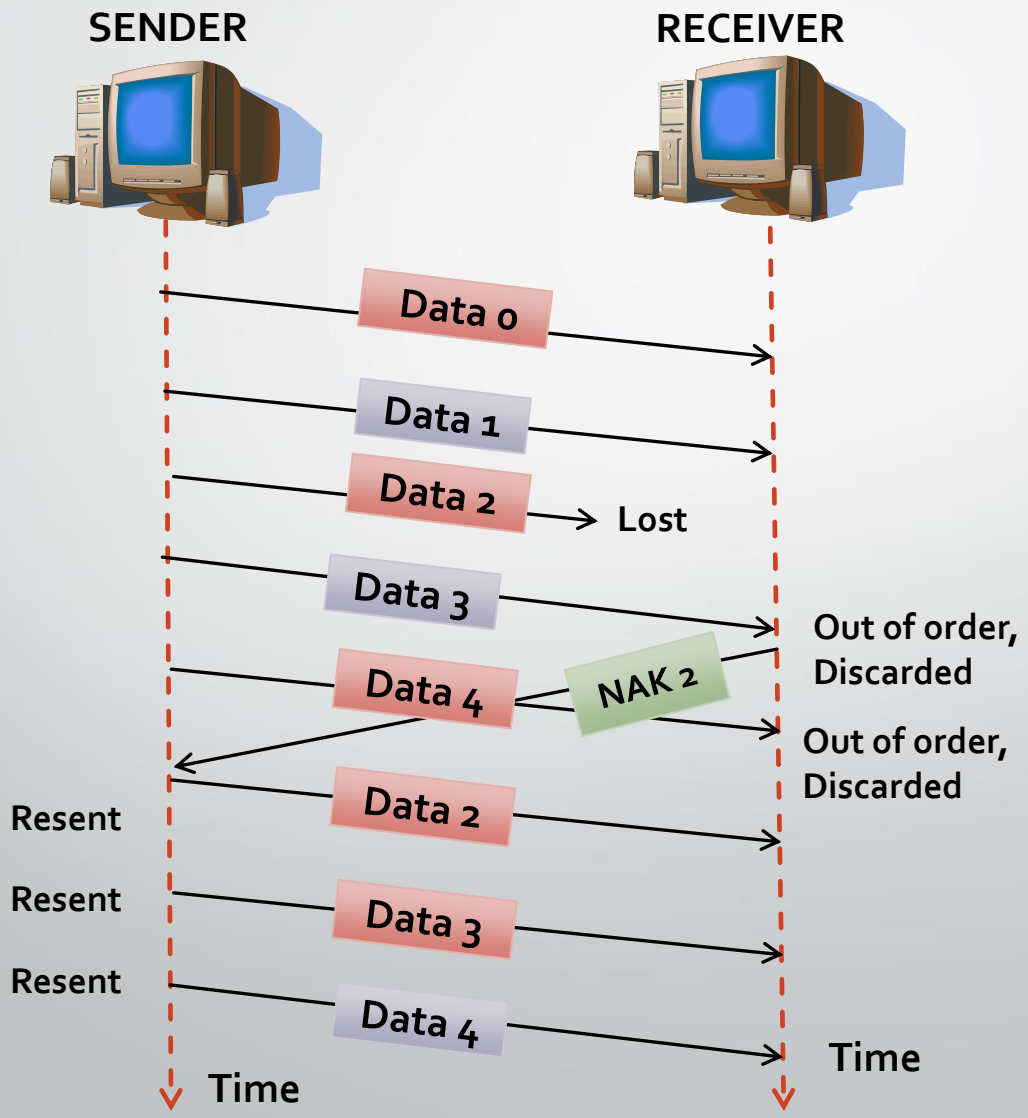
Go-Back-N Automatic repeat request

- we can send several frames before receiving
- The receiver process keeps track of the sequence number of the next frame it expects to receive.
- It will discard any frame that does not have the exact sequence number it expects
- Go-Back-*N* ARQ is a more efficient use of a connection than **Stop-and-wait ARQ.**

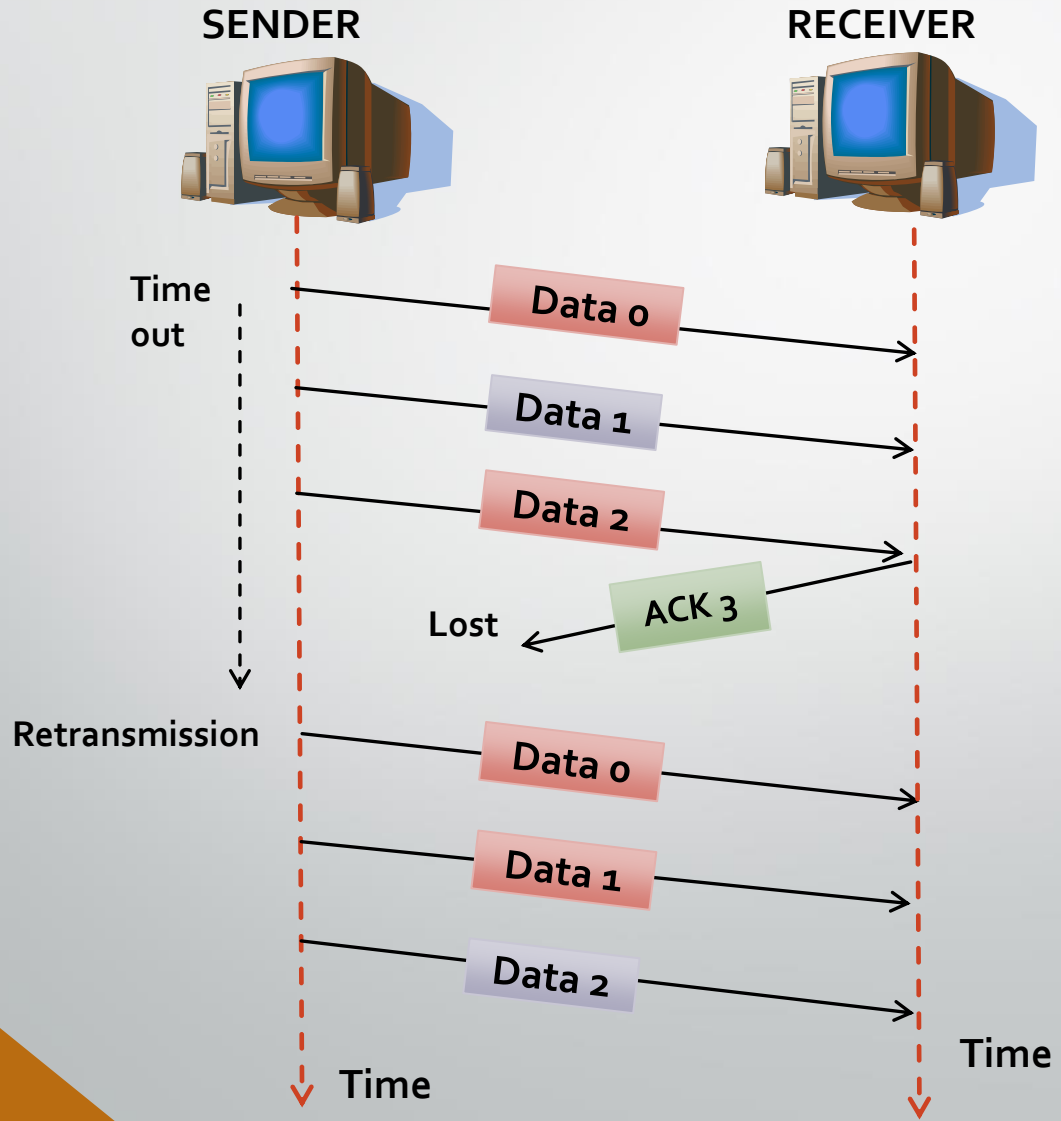
Go-Back-N ARQ for damaged data frames



Go-Back-N ARQ for lost data frames



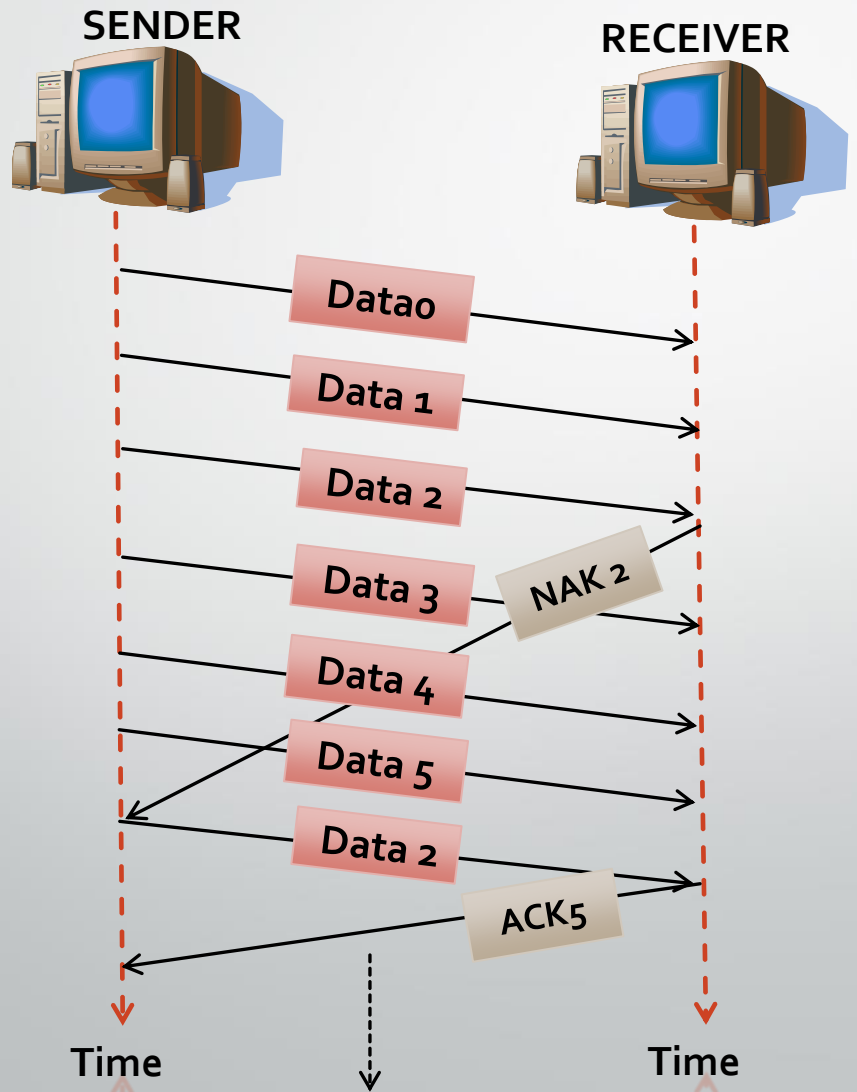
Go-back-N ARQ for lost ACK frames



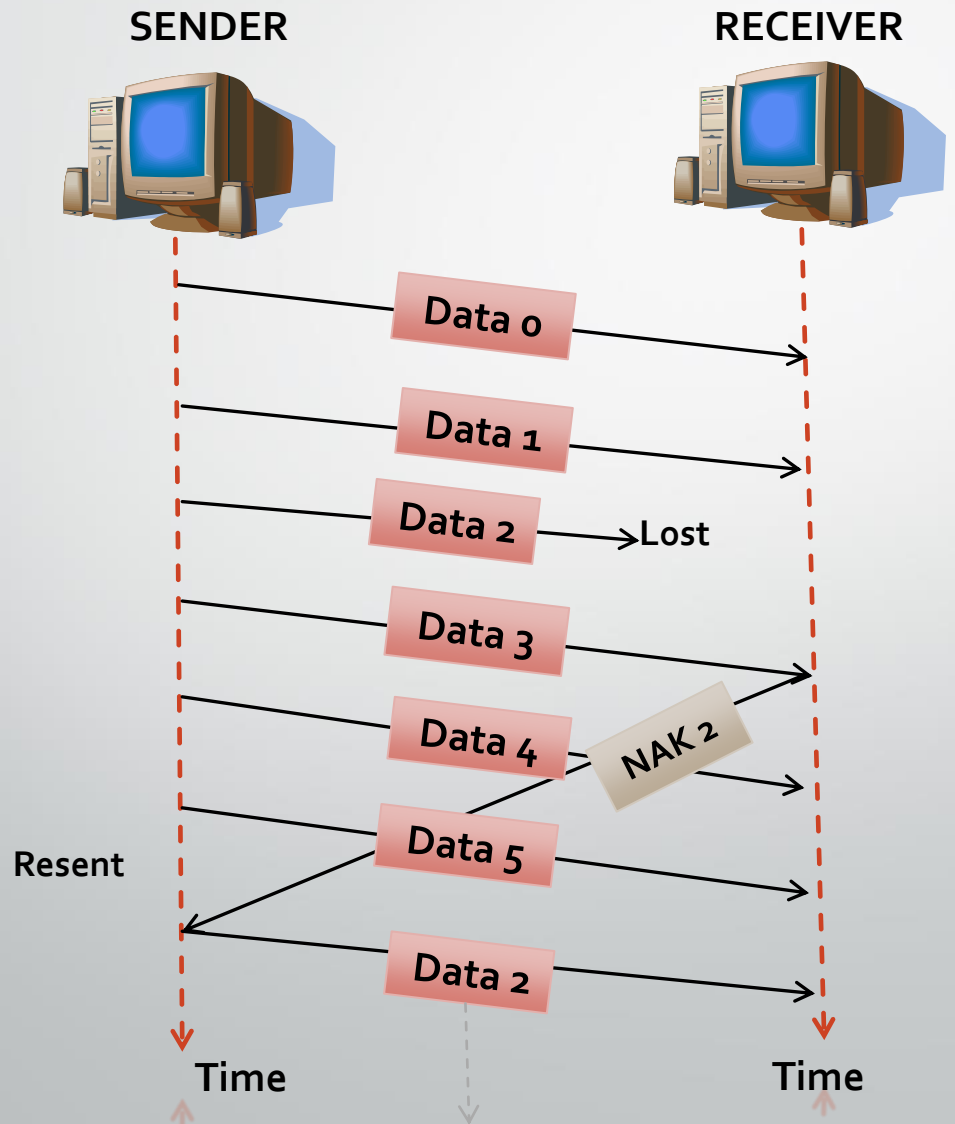
Selective Reject ARQ

- It is the mechanism that does not resend N frames when just one frame is damaged ;only the damaged frame is resent.
- Its is more efficient for noisy links, but the processing at the receiver is more complex.
- If any data frame is corrupted or lost ,the receiver sends NAK with number of that frame.
- The source retransmits that frame out of sequence
- In this ARQ receiver must be able to sort the frame into its proper place in the sequence.

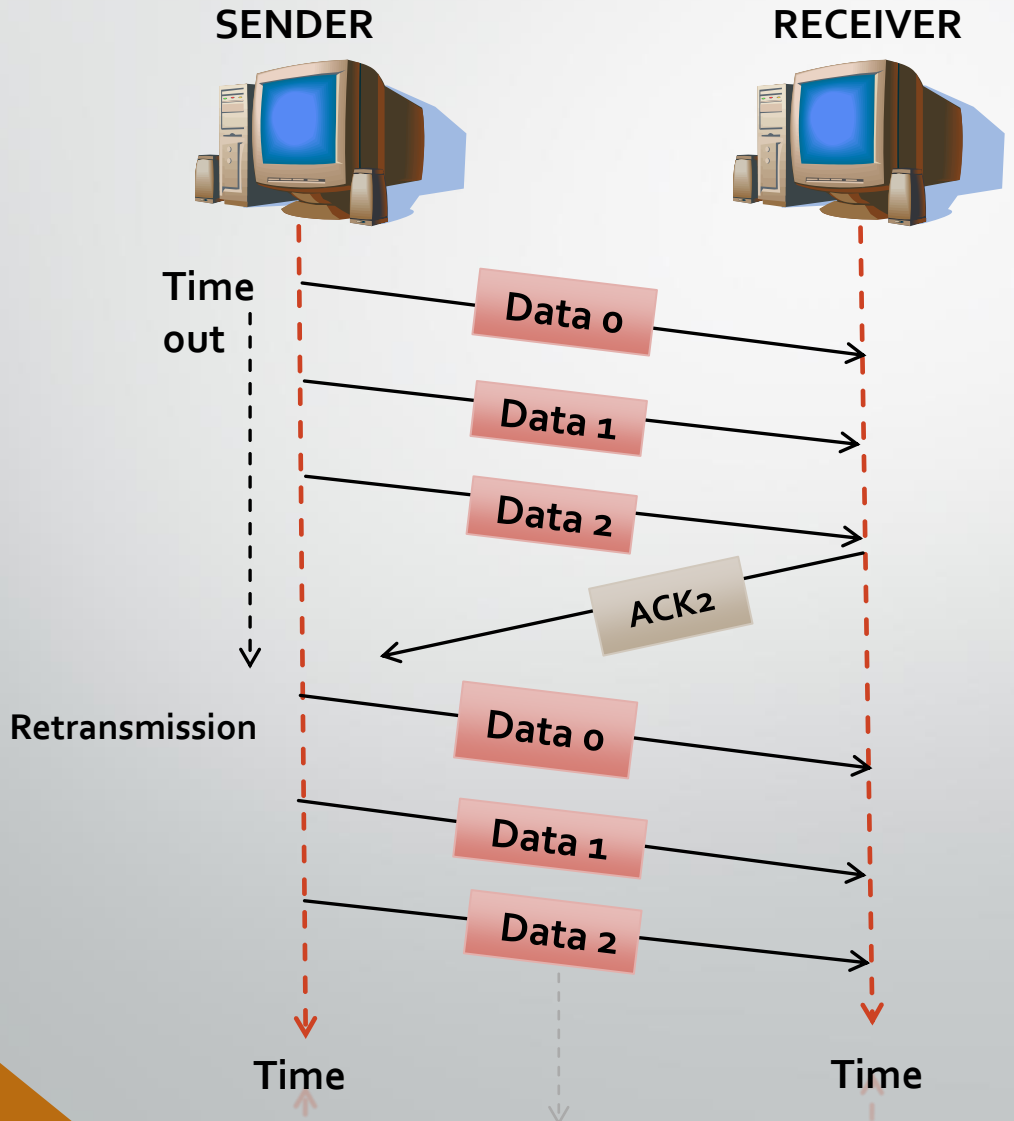
Selective Reject ARQ for damaged frames



Selective Reject ARQ for lost frames



Selective Reject ARQ for lost ACK frames



THANK YOU!!!