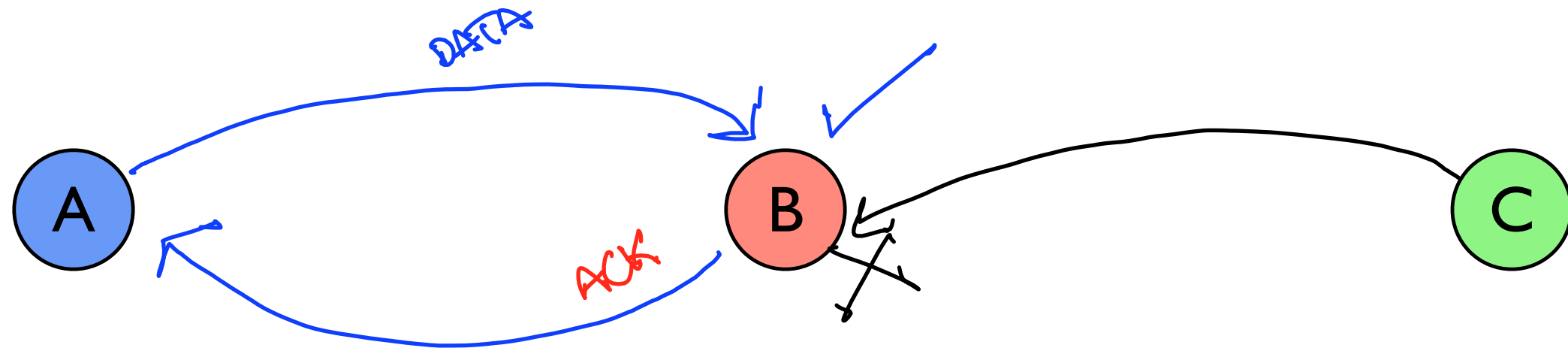



Wireless: CSMA/CA

Carrier sense multiple access/collision avoidance

Link Layer Acknowledgments

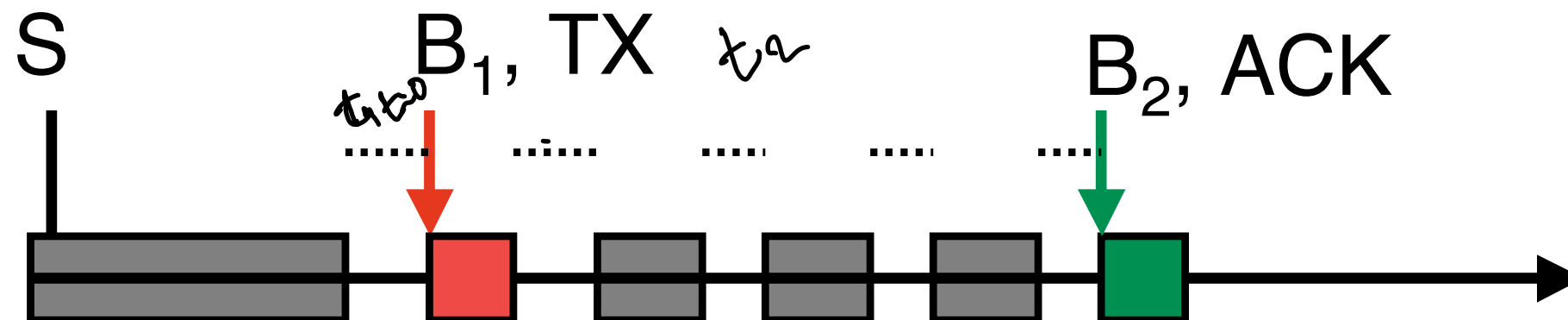


CSMA/CA

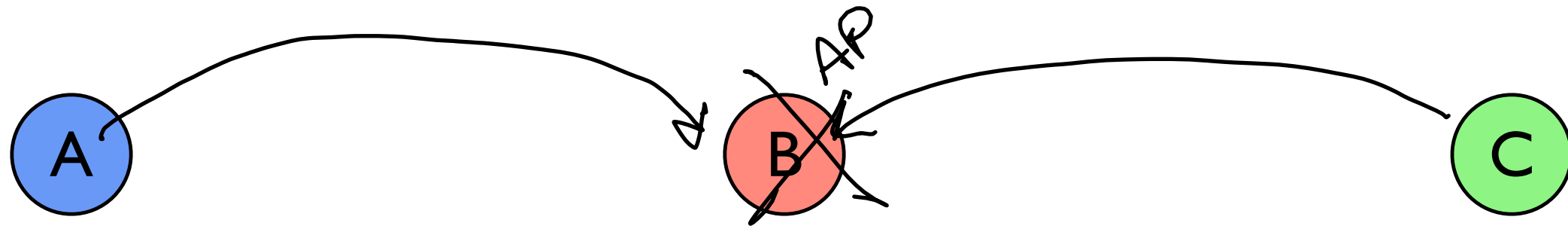
- Pick random backoff
- Sense local channel, transmit after backoff
- If packet not acknowledged, backoff again,  retry
- If packet acknowledged, accept next packet for transmission

802.11 CSMA/CA

- Pick a random initial wait period t
- Periodically check channel, if idle, decrement t
- When $t=0$, try to transmit
 - ▶ If packet received successfully (acknowledged), accept next packet for transmission
 - ▶ If packet not received successfully, double t
 - ▶ If $t \geq T$, drop packet



Problem 1: Hidden Terminals



A is hidden to C

C is hidden to A

Problem 2: Exposed Terminals



A can't hear C
D can't hear B

Problem 3: Collision or Low SNR?

