EECS 489 Discussion 4

Annoucements

- Project 2 is out
- Please declare teammate by **Fri 10/05**
- Please follow updates on Piazza

Annoucements

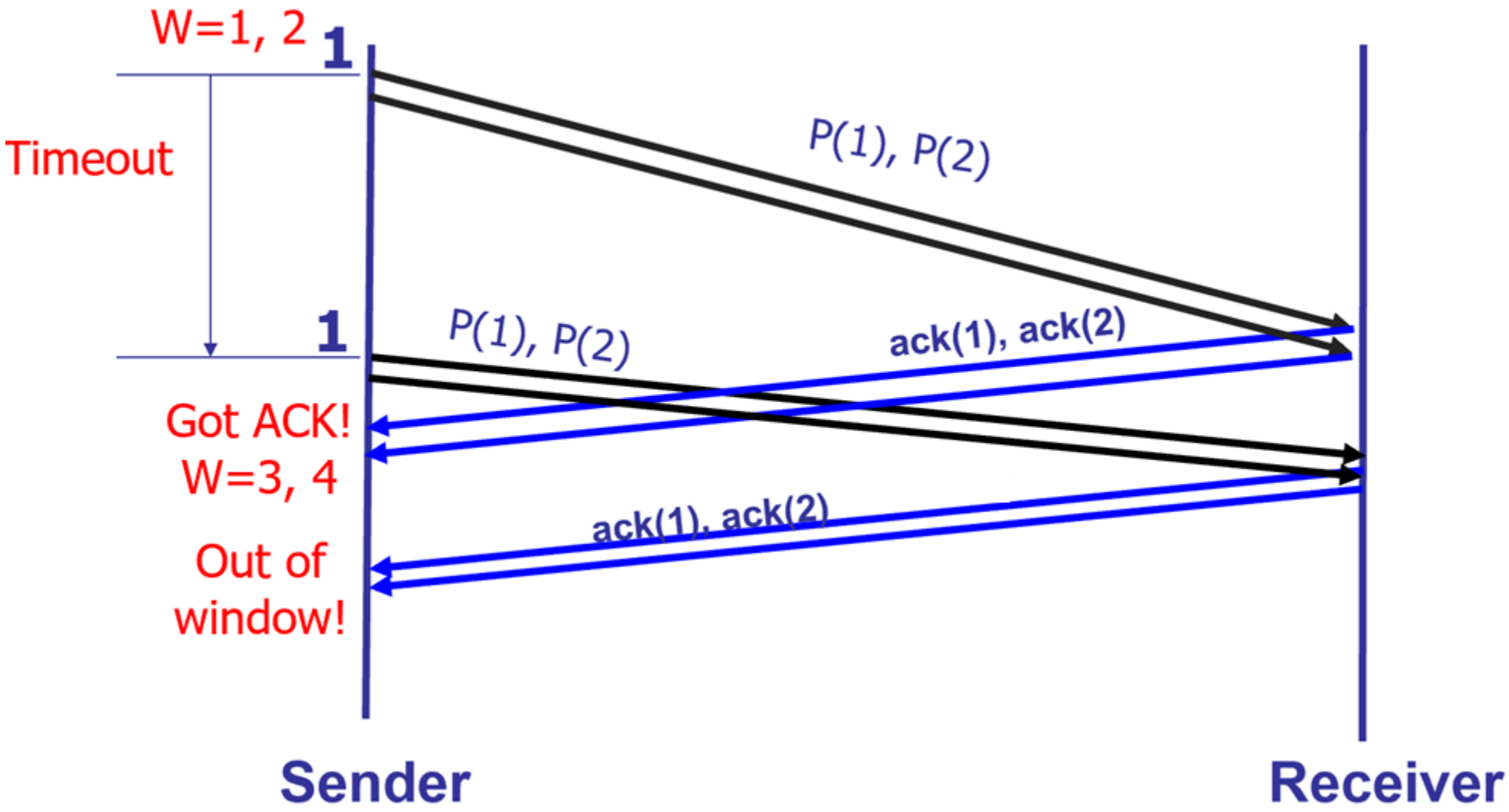
- Feedback Form available
  - We’d like to hear from you!
  - Tell us what you want to hear on discussion session!

Q1

- With the Selective Repeat (SR) protocol, Is it possible for the sender to receive an ACK for a packet that falls outside of its current window? Why?

- **True**

Q1


W=1, 2
1
Timeout
P(1), P(2)
1
P(1), P(2)
ack(1), ack(2)
Got ACK!
W=3, 4
ack(1), ack(2)
Out of
window!
Sender
Receiver

Q2

- With the GBN (Go-Back-N) protocol, Is it possible for the sender to receive an ACK for a packet that falls outside of its current window? Why?

- **True**
- **Same scenario**

Q3

- Consider a reliable data transfer protocol that uses only **negative acknowledgments (NACK)**. Suppose the sender sends data only infrequently. Would a NACK-only protocol be preferable to a protocol that uses ACKs? Why?
  - NACK: send NACK upon packet loss

- **No.**

Q4

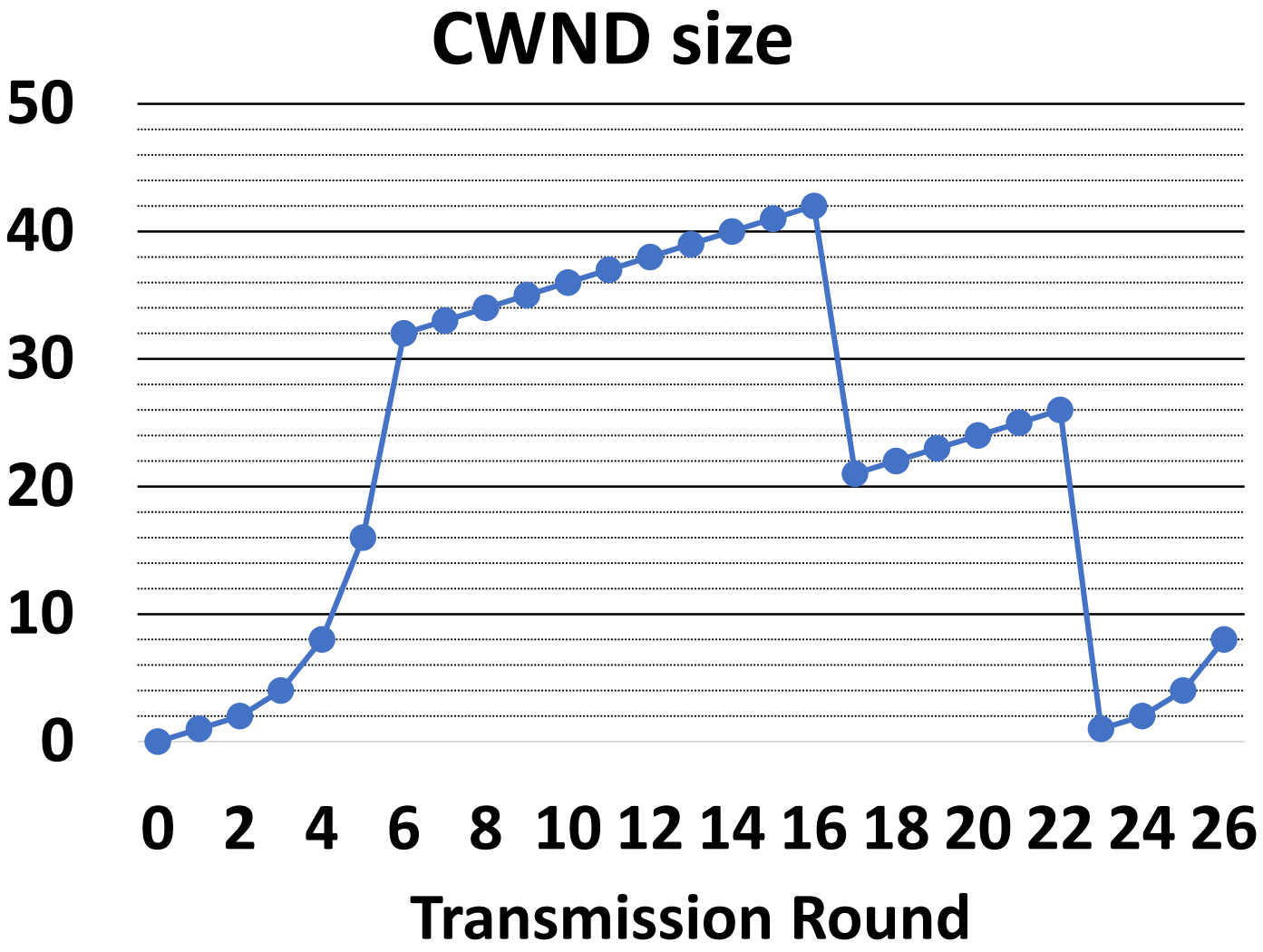
- Now suppose the sender has a lot of data to send and the end-to-end connection experiences few losses. In this second case, would a NACK-only protocol be preferable to a protocol that uses ACKs? Why?

- **Yes.**

Q5 TCP Congestion control

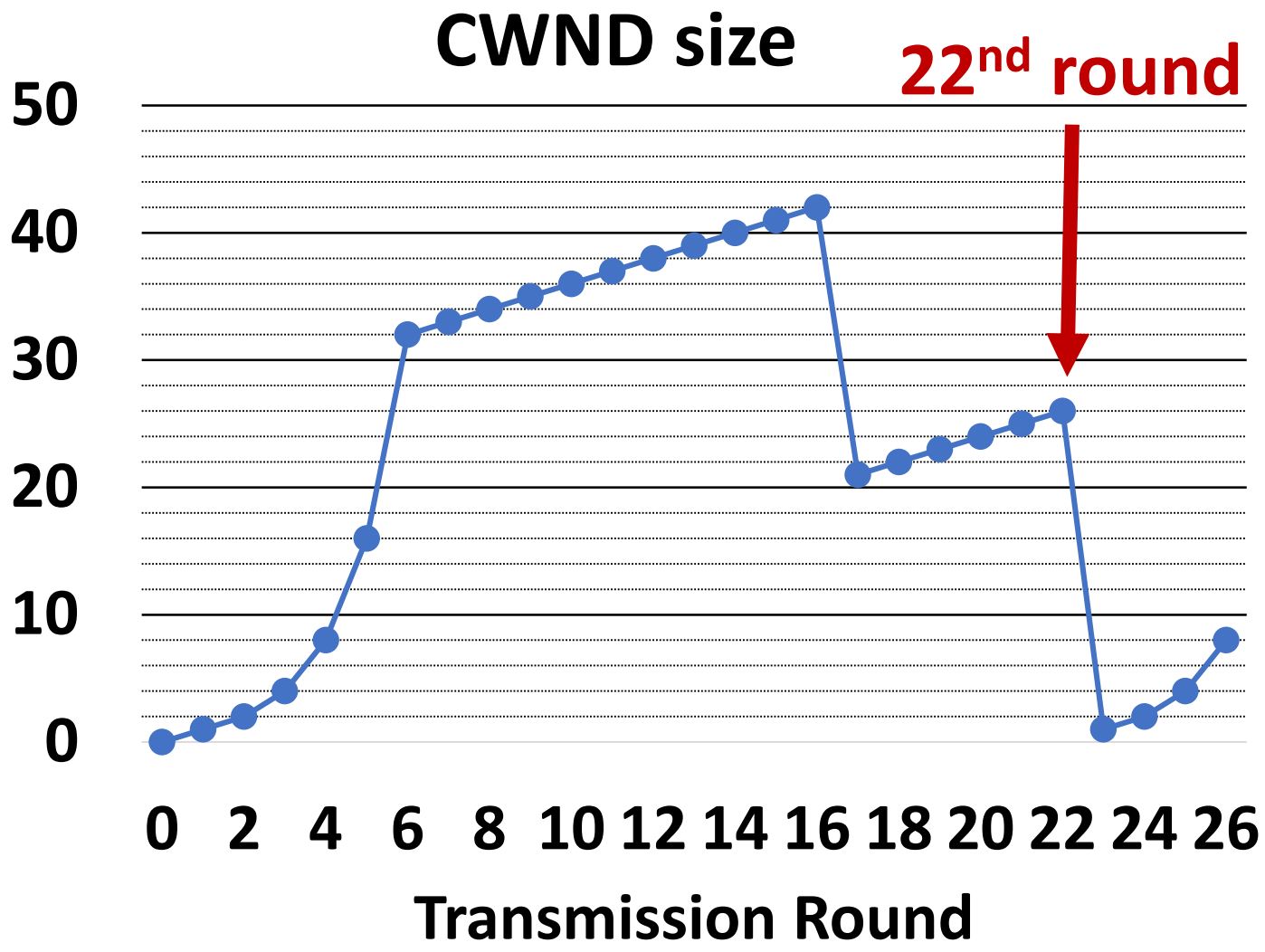
Identify:

- TCP slow start
- Congestion avoidance (AIMD)
- Retransmission



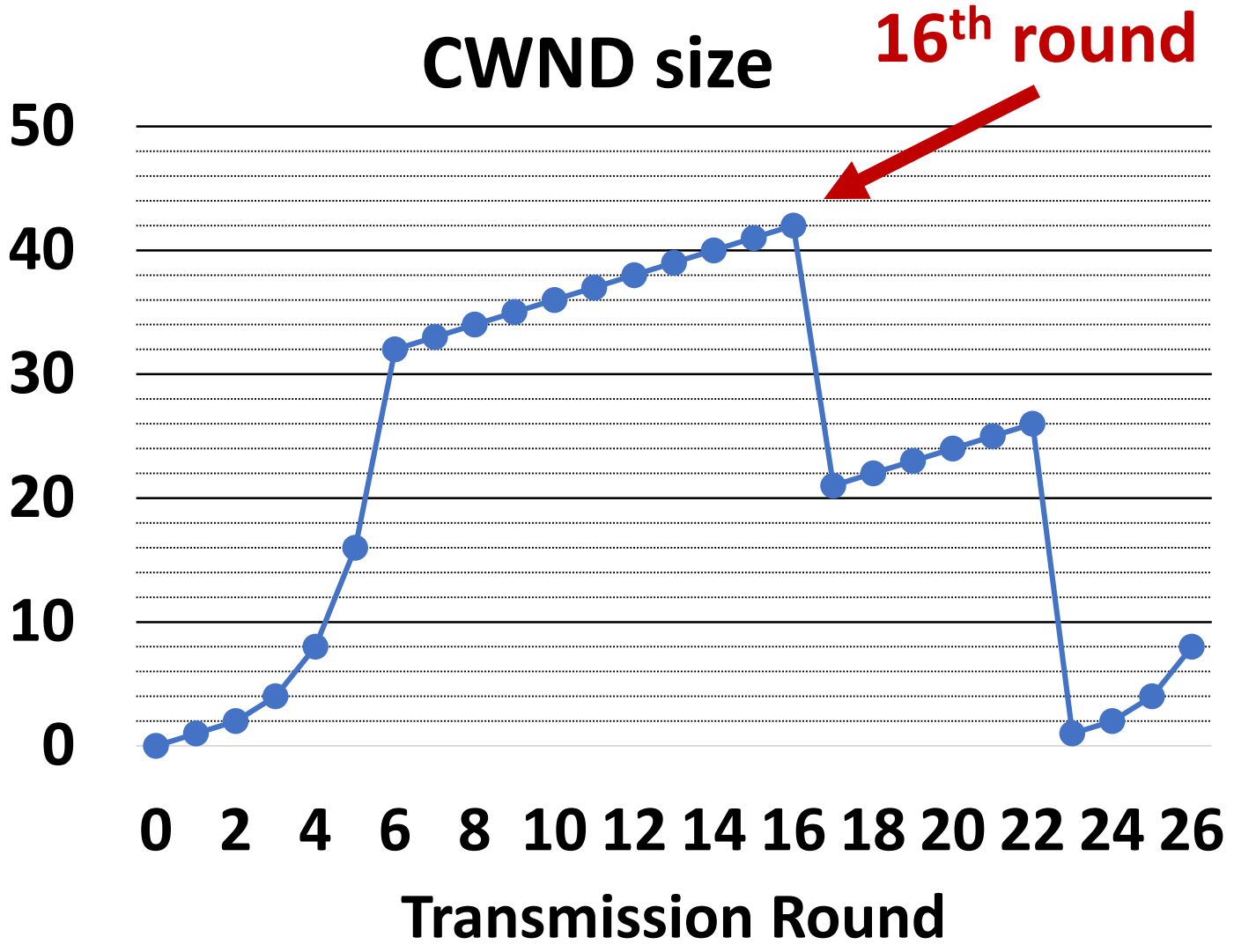
Q5 TCP Congestion control

- What triggers retransmission at 22nd round?
- **Timeout**



Q5 TCP Congestion control

- What triggers retransmission at 16th round?
- **Duplicate ACK**



Q5 TCP Congestion control

ssthresh at 1st round?

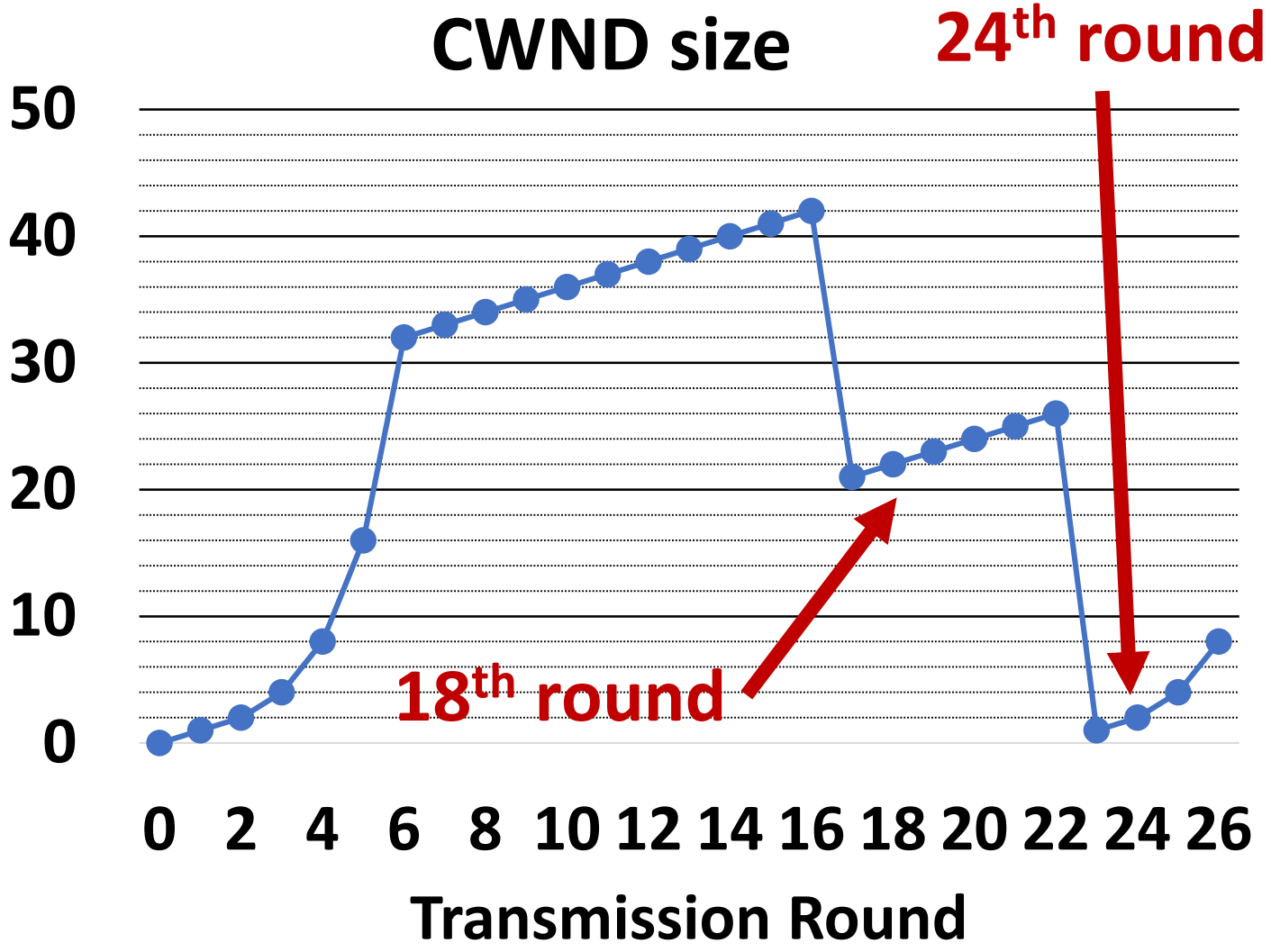
32

ssthresh at 18th round?

21

ssthresh at 24th round?

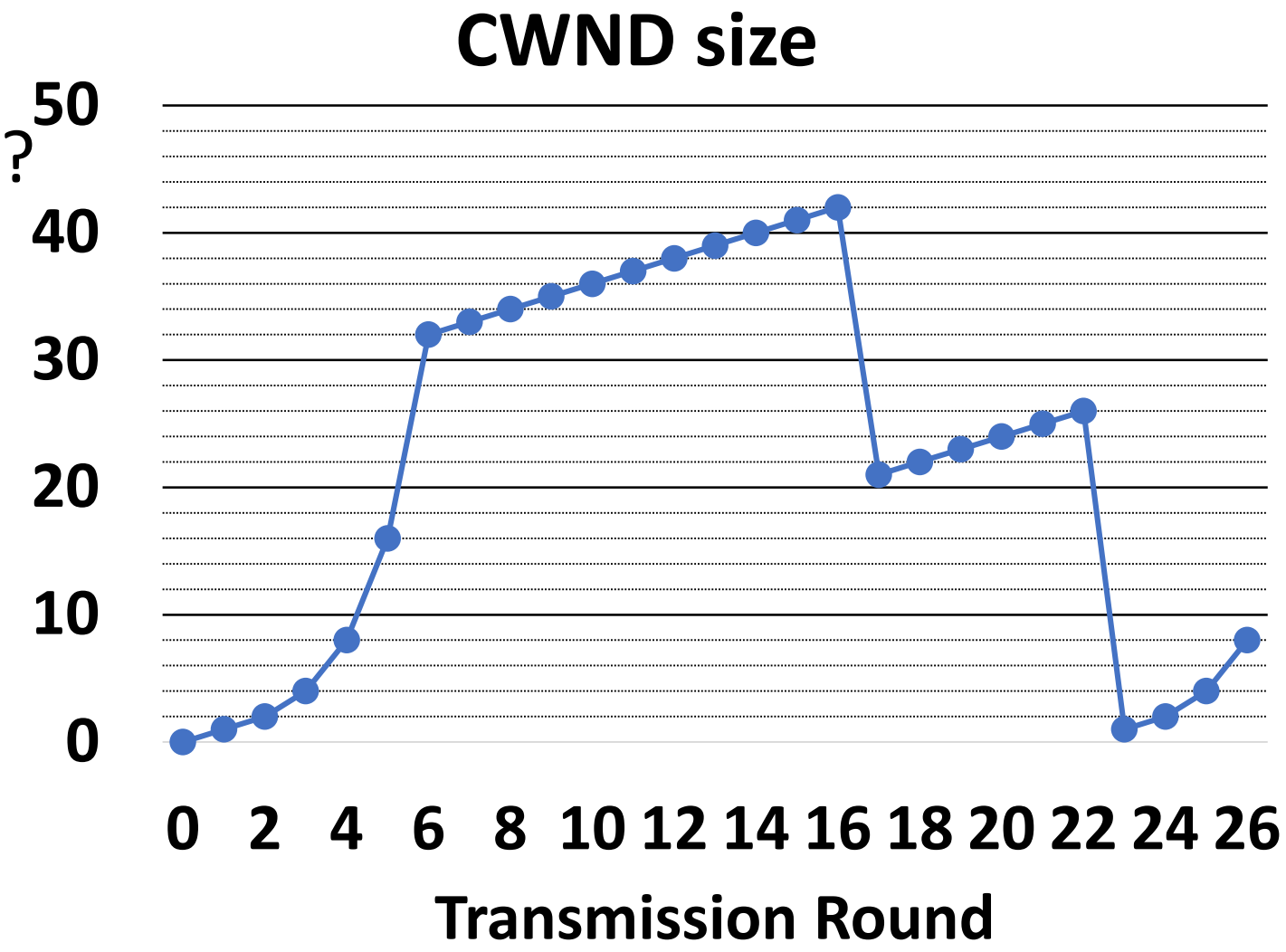
13



Q5 TCP Congestion control

When is 70th segment sent?

Round 7



Demo of Network Utilities

Super useful tools to debug your projects:

- Wireshark
- Nc

- Demos:
  - HTTP
  - TCP
  - UDP
  - DNS