EECS 489 Discussion 4

Annoucements A2

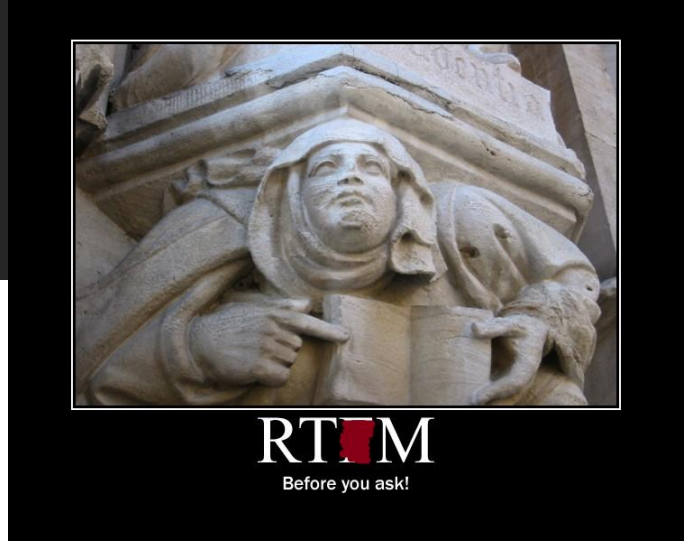
- Please check you team and repos in the eecs489 organization
  - https://github.com/eecs489
- Start early, this one is really hard
- Please follow updates on Piazza

Piazza != Office Hour

	# of people	# of responses	Resp. per capita
Students	120	50	**0.417**
Instructors	3	167	**55.67**

- Please contribute to Piazza
- Significant contribution **will be rewarded (w/ extra test chances)**

Use Piazza Efficiently



- Detail, Detail, Detail…
  - As if asking grandma to reproduce your problem

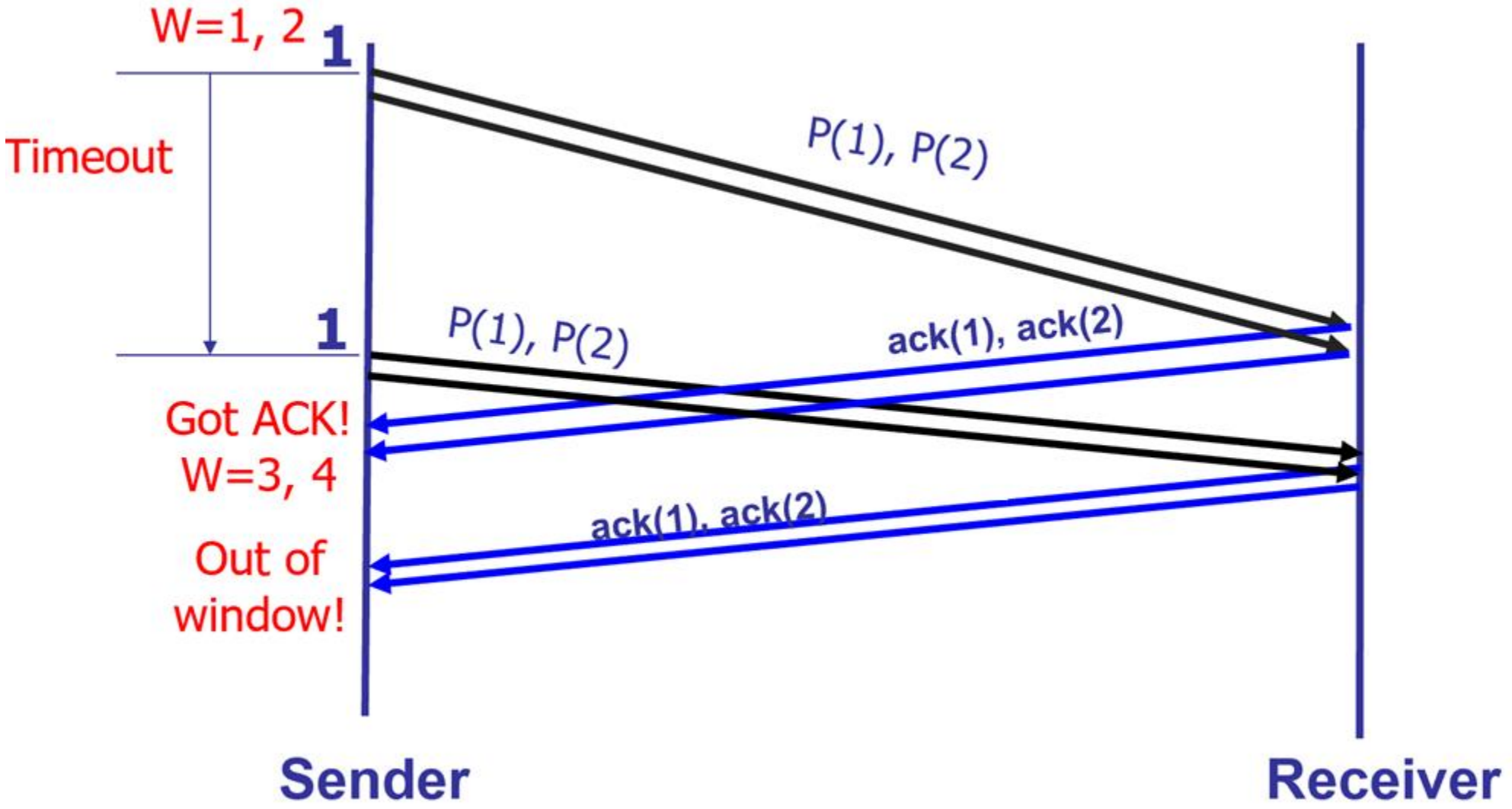
- Think/Search (google+piazza) before you ask
  - “Is X normal” -> “I think X is not normal, because of Y. Does this make sense?”
  - Don’t ask duplicate questions

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. In a NAK only protocol, the loss of packet x is only detected by the receiver when packet x+1 is received. If there is a long delay between the transmission of x and the transmission of x+1, then it will be a long time until x can be recovered, under a NAK only protocol.**

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. If data is being sent often, then recovery under a NAK-only scheme could happen quickly. Moreover, if errors are infrequent, then NAKs are only occasionally sent (when needed).**

GBN v.s. SR Demo

https://www2.tkn.tu-berlin.de/teaching/rn/animations/gbn_sr/

Demo of Network Utilities

Super useful tools to debug all your projects:

- wireshark (install w/ APT) www.wireshark.org/docs/
- nc (netcat) linux.die.net/man/1/nc

- Demos:
  - HTTP
  - TCP
  - UDP
  - DNS