Section 3

Friday, June 14, 2019 10:21 AM

Week 3 Handout

CS168 Fall 2015 Section 3 - Reliable Communication

Individual Packet ACKs

Consider a flaky link where the *initial* transmission of a data packet is dropped if its number is prime (in other words, the initial transmissions of D2, D3, D5, and D7 are dropped, but *subsequent* transmissions are ok). The receiver will reply with an *ACK of an individual packet* upon receipt (so it will acknowledge packet 2 upon receipt of packet 2). The sender will wait for the ACK to send the next packet (window size of 1), or timeout to resend the packet. The sender should send D1-D10. You should identify packets that are being resent due to timeout. You may or may not need to fill in all lines.

#	Packet # Sent	sent on timeout?	dropped?	*individual* packet ACK
1	D1			Received Packet 1
2	D2		x	
3	D2	x		Received Packet 2
4	D3		x	
5	D3	x		Ack4
6	D4			Ack5
7	D5		x	
8	D5	x		Ack6
9	D6			Ack 7
10	D7		x	
11	D7	x		Ack 8
12	D8			Ack9
13	D9			Ack10
14	D10			Ack11
15				

If the RTT of the link is 10ms and the timeout is 3 seconds, what is the total time needed for the receiver to receive all packets and for the sender to know that? Assume small packets (negligible transmission delay) and negligible processing time.

4 drops
10 normal

10*0.01 + 4 * 3 = 12.1

Cumulative ACKs

Again, consider a flaky link where the *initial* transmission of a data packet is dropped if its number is prime. Note that the ***ACKs are cumulative*** and numbered according to the next expected packet (hence, A4 indicates the receipt of D1, D2, and D3). Hosts are using a window with a constant window size of 3 packets. The sender will shift the window to the highest unacked packet for which all previous packets have been ACKed. On shifting the window, the sender should send new packets that haven't yet been sent. On timeout, the entire window is retransmitted. The sender should send D1-D10. You may or may not need to fill in all lines.

#	Packet # Sent	sent on timeout?	dropped?	*cumulative* ACK
1	D1			A2
2	D2		x	
3	D3		x	
4	D4			A2
5	D2	x		A3
6	D3	x		A4
7	D4	x		A5
8	D5		x	
9	D6			A5
10	D7		x	
11	D5	x		A6
12	D6	x		A7
13	D7	x		A8
14	D8			A9
15	D9			A10
16	D10			

If the RTT of the link is 10ms and the timeout is 3 seconds, what is the total time needed for the receiver to receive all packets and for the sender to know that? Assume small packets (negligible transmission delay) and negligible processing time.

6.03