Week8 Self study

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1. ﻿﻿What are the pros and cons of Go-Back-N and Selective Repeat protocols?

Go-back-N algorithm is more simple algorithm than Selective Repeat protocols. In addition, it occupies less memory space since receiver side do not need to have packet queue to deal with out-order packet stream. Also, Go-back-N is more robust against acknowledge packet loss. It decides cumulative acknowledge which send in-order highest packet acknowledge, it do not have to send all packets if preceding packets acknowledge response is lost. However, it has some problems. It is not effective for data packets loss. Since accumulative acknowledge is set, it need to re-send the lost-packet and after that too. When timer expires, it should retransmit all unacknowledged packet.

Selective repeat protocol is the thing which solves problem of retransmitting all unacknowledged packet. Although it is more complex than Go-back-N protocol, it deals with only missing packets. It does not have to re-send all packets. However, it has to have receiver packet queue, either. It has big problem in acknowledge packet loss. For example, suppose that response with acknowledge packet with receiving all data packet, but only last acknowledge is successfully sent. In this case, the sender should re-send all packets except last packet. In case of Go-back-N protocol, if last packet of acknowledge sends successfully, it means all packets receives well.

1. ﻿How would you design / implement the timeout mechanism of Selective Repeat?

For timer in selective Repeat protocol, there is more than one timer. Timer should exist for individual packet, operate separately to re-send each packet. To implement the timeout mechanism for it, reserves N (which is window size) timer. Allocate timers to each packets then set the timers. Every time sender receive acknowledge response, reset the timer corresponding acknowledge packet(become idle timer). Each time send\_base increases (or window moves), allocate idle timer for new packet.