

#### Assignment 4: Implementation of reliable data transfer protocol(RDT)

In this assignment you will simulate the reliable data transfer protocol with **UDP** sockets. You will have to implement both the stop and wait version (rdt 3.0) and pipelined version (selective repeat) of RDT.

You have to write a client and a server which are able to transfer data in either directions simultaneously in a concurrent manner. You need to simulate all possible scenarios like error free transmission, packet loss, out of order packets, duplicate ACK etc.

Your packets should be of following format.

```
struct pkt {  
    int seqnum;  
    int acknum;  
    char payload[20];  
};
```

You should be transmitting a huge file which is big enough to show multiple rounds of transmission between the processes (slice this file to chunks which can be sent as payload in each packet). Your design for pipelined version will have a **sliding window** defined and you must show window manipulation properly. You should be able to start transmitting the windows worth segments and then wait for the acknowledgement. As and when an acknowledgement is received, the sender window should move forward. Similarly at the receiver side the window should move forward whenever it receives an expected packet. If the receiver is receiving an out of order packet it must send a duplicate ACK for this packet (ACK of the last properly received packet) until it receives the correct packet. Also the receiver should be able to send a cumulative acknowledgement for a set of packets received in order (upto receiver windows worth packets). You should simulate the packet loss scenario and simulate the selective retransmission of the lost packets.

Design a menu to show the various possible scenarios in both versions.

Evaluation pattern

Your submission will be evaluated in the following order with weightages shown next to it

1	Design	4 marks
2	Stop and wait transmission with all scenarios(without concurrency – one direction transfer is enough)	5 marks
3	Stop and wait transmission with all scenarios (with concurrency – simultaneous transmission in both directions)	6 marks
4	Selective repeat with all scenarios (without concurrency -one direction transfer is enough )	7 marks
5	Selective repeat with all scenarios (with concurrency – simultaneous transmission in both directions)	8 marks

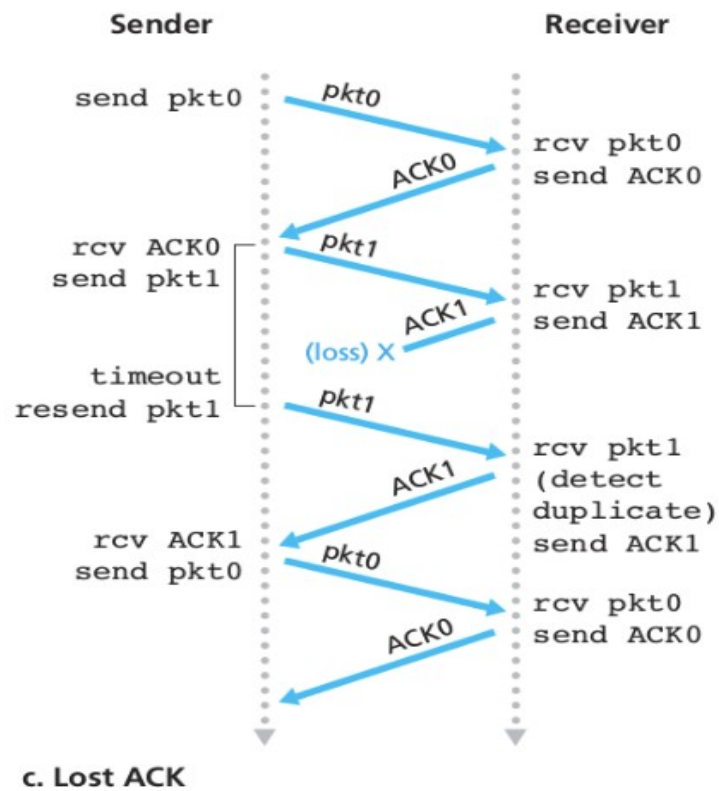
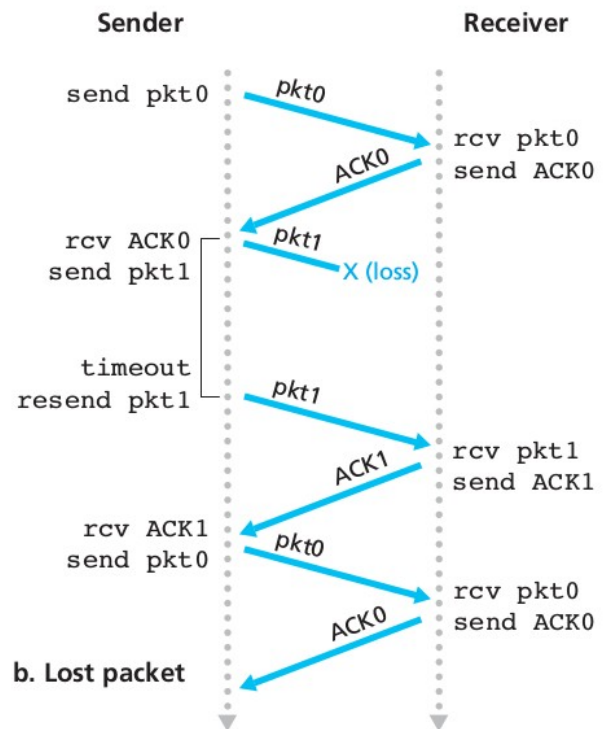
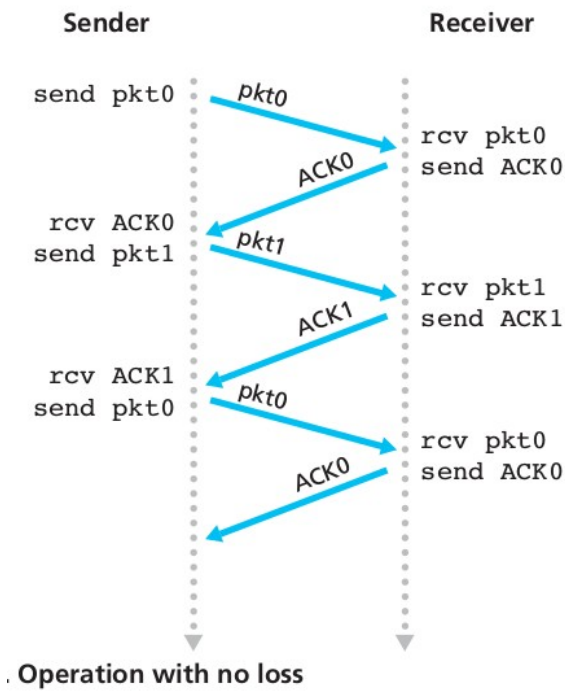
Submit the following with naming convention given below

Sender : 4\_B130\*\*\*.c

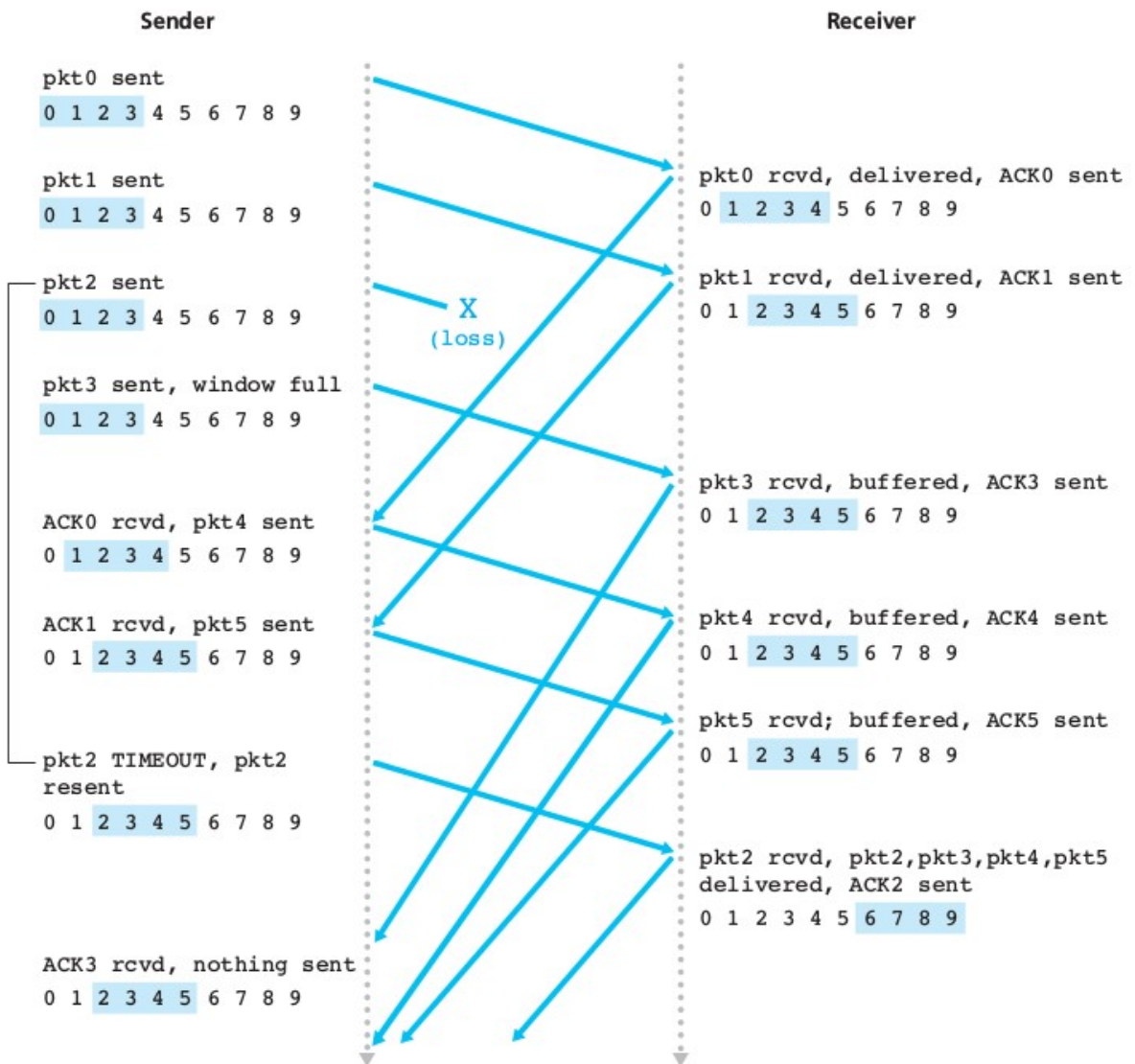
Receiver: 4\_B130\*\*\*.c

Design: 4\_130\*\*\_design

Zip all these into a file named 4\_B130\*\*\*



RDT 3.0 (one direction data transfer)



SR operation (one direction data transfer)