Computer Network HW2

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How To execute my code:

Open three python files with the following order and parameters:

(1) **Agent:** `python agent.py $AGENT_IP $AGENT_PORT $RECV_IP $RECV_PORT $DROP_RATE`
(2) **Receiver:** `python receiver.py $RECV_IP $RECV_PORT`
(3) **Sender:** `python sender.py $SEND_FILE_PATH $AGENT_IP $AGENT_PORT`

The final result will be saved as "result.xxx" in the Receiver.py directory.

Default parameters : Sender : threshold 16, Receiver : buffer 32
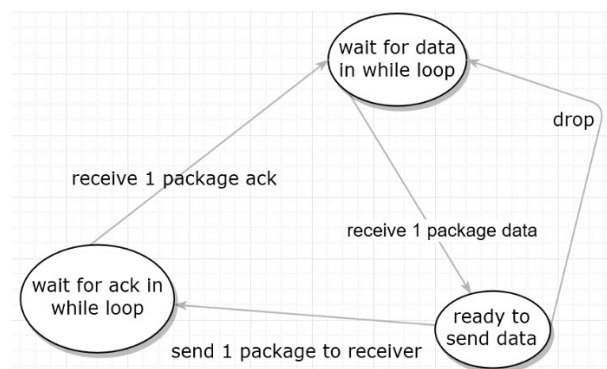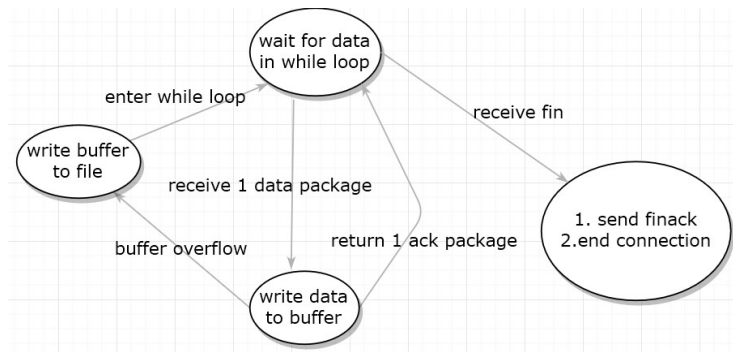
Flow Charts:
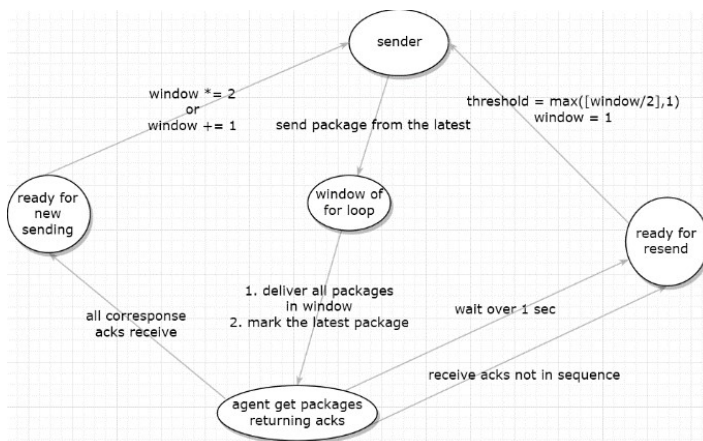
Sender:

1. subtitle is the first package
2. fin is the last package
3. terminate when receiving finack

Agent:

1. random dropping data will not receive ack
2. calculate drop rate after "fwd data"

wait for data
in while loop

enter while loop

receive fin

write buffer
to file

receive 1 data package

1. send finack
2.end connection

buffer overflow

return 1 ack package

write data
to buffer

Receiver:

1. get subtitle of file in the first package
2. return ack for every data in, including finack

Difficulties and Solutions:

(1) Non-blocking sockets require try function to capture errors. So while loop implementation is required. Due to droppings of data, my socket in sender needs either blocking with settimeout or non-blocking state.

(2) In agent, I chose to get 1 data package and forward it in a while loop with try. Therefore, I used a flag to make sure that after forwarding a data package, it should be at a state to wait for an ack. This really caused me a lot of trouble before noticing it.