HW2 # TCP Congest control

> *Computer Network Course @ NTU, Fall 2017*
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> *Environment: Mac OSX 10.13.2, using python 3.5*

How to execute

Set arguments

- In **sender.py**, change the following arguments to what you want:

```
FILE_PATH = "test/pdf.pdf"                  # (line 7) path of source file
agent_addr = ('127.0.0.1', 31600)           # (line19) agent's address
```

- In **agent.py**, change the following arguments to what you want:

```
LOSS_RATE = 0.3                             # (line 6) agent's loss rate
recv_addr = ('127.0.0.1', 31500)            # (line 9) receiver's address
agent_addr = ('127.0.0.1', 31600)           # (line13) agent's address
```

- In **receiver.py**, change the following arguments to what you want:

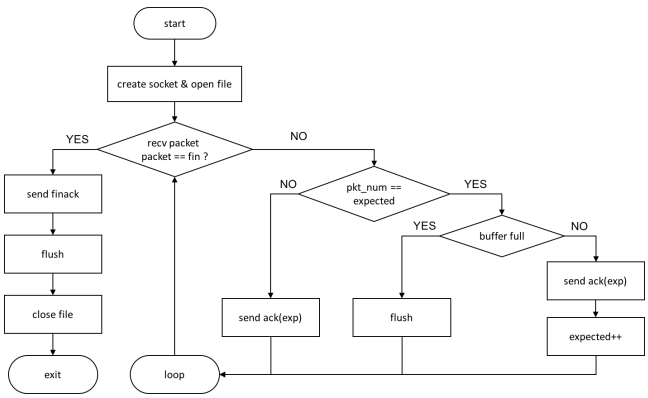
```
FILE_PATH = "test/result.pdf.pdf"           # (line 4) path of destination fi
le
recv_addr = ('127.0.0.1', 31500)            # (line 9) receiver's address
```

Execute

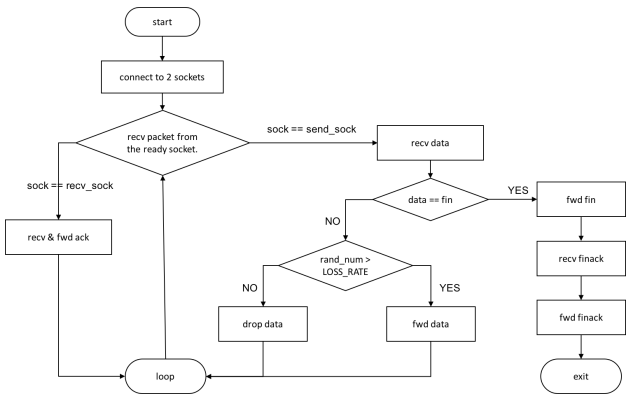
Open 3 terminals, and run the following commands (<u>one in each</u> terminal) ***in order***.

```
$ python3 receiver.py
$ python3 agent.py
$ python3 sender.py
```

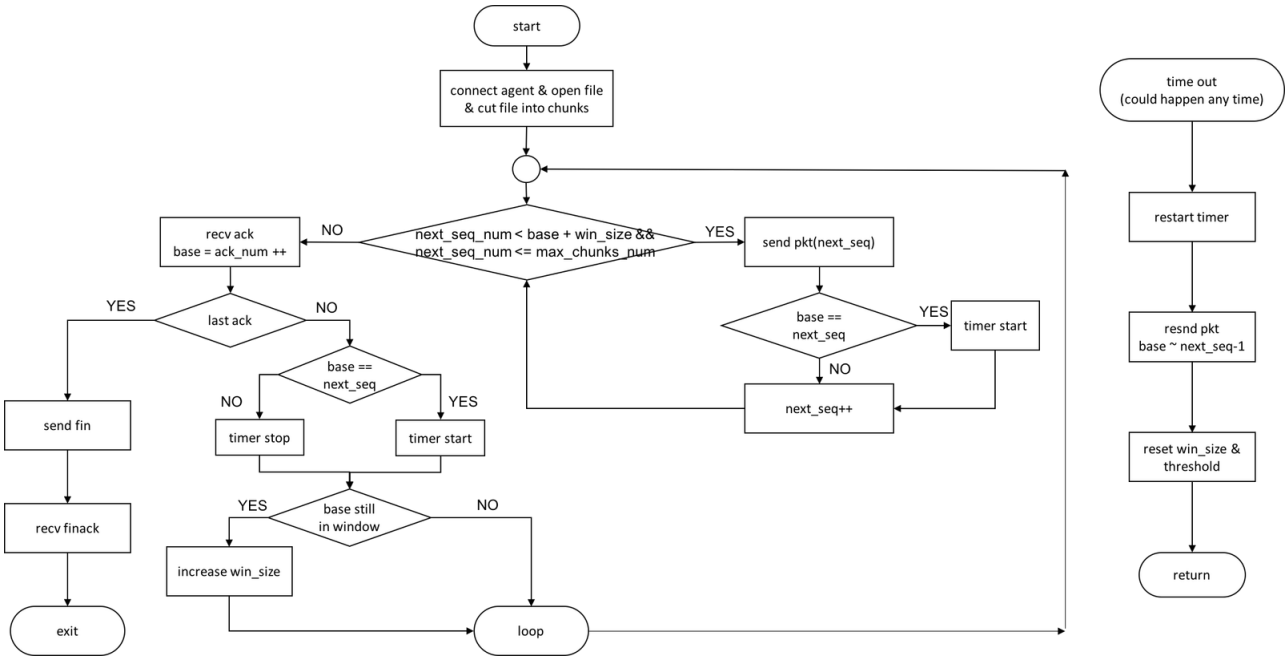
Program structure



recver



agent



Sender

Difficulties

1. **Listen to multiple sockets**
   The agent should listen to 2 sockets, one connected to the sender and the other connected to the receiver. To achieve this without blocking, I use the `select` function.
2. **Sending binary data**
   At first, I use a json object to represent a packet. However, a json object can only include string or number, not binary data. So I used a byte array with fix length to represent a packet. The packet number is the 1~4 of the array.
3. **Global variable**
   Different from C, global variables in Python can not be called directly in a function. Instead, they should be declared as global in a function. This took me some time debugging.