

Assignment 3 :

Amala Joshy

Github URL :

<https://github.com/amalajoshy/cs5700/tree/master/assignment3>

Run commands:

Stop and wait :

python3 demo_receiver.py ss

Use another terminal to start the sender :

python3 demo_sender.py ss **** Sender side : fig**

```
Amalas-MacBook-Air:skelton amalas$ python3 demo_sender.py ss
MSG:0
Sending pkt: b'\x00\x01\x00\x00kqMSG:0'
Received packet: b'\x00\x02\x00\x00\xff\xfd'
MSG:1
Sending pkt: b'\x00\x01\x00\x01kpMSG:1'
Sending pkt: b'\x00\x01\x00\x01kpMSG:1'
Received packet: b'\x00\x02\x00\x01\xff\xfc'
MSG:2
Sending pkt: b'\x00\x01\x00\x00kqMSG:2'
Received packet: b'\x00\x02\x00\x00\xff\xfd'
MSG:3
Sending pkt: b'\x00\x01\x00\x01kpMSG:3'
Sending pkt: b'\x00\x01\x00\x01kpMSG:3'
Received packet: b'\x00\x02\x00\x01\xff\xfc'
MSG:4
Sending pkt: b'\x00\x01\x00\x00kqMSG:4'
Received packet: b'\x00\x02\x00\x00\xff\xfd'
MSG:5
Sending pkt: b'\x00\x01\x00\x01kpMSG:5'
Received packet: b'\x00\x02\x00\x01\xff\xfc'
MSG:6
Sending pkt: b'\x00\x01\x00\x00kqMSG:6'
Sending pkt: b'\x00\x01\x00\x00kqMSG:6'
Sending pkt: b'\x00\x01\x00\x00kqMSG:6'
Received packet: b'\x00\x02\x00\x00\xff\xfd'
MSG:7
Sending pkt: b'\x00\x01\x00\x01kpMSG:7'
Sending pkt: b'\x00\x01\x00\x01kpMSG:7'
Received packet: b'\x00\x02\x00\x01\xff\xfc'
MSG:8
Sending pkt: b'\x00\x01\x00\x00kqMSG:8'
Received packet: b'\x00\x02\x00\x00\xff\xfd'
MSG:9
Sending pkt: b'\x00\x01\x00\x01kpMSG:9'
Received packet: b'\x00\x02\x00\x01\xff\xfc'
MSG:10
Sending pkt: b'\x00\x01\x00\x00kqMSG:10'
Sending pkt: b'\x00\x01\x00\x00kqMSG:10'
Sending pkt: b'\x00\x01\x00\x00kqMSG:10'
Received packet: b'\x00\x02\x00\x00\xff\xfd'
MSG:11
```

Receiver side : fig

```
Amalas-MacBook-Air:skeleton amalas python3 demo_receiver.py ss
Received packet: b'\x00\x01\x00\x00kqMSG:0'
Received seq number: 0
Expected seq number: 0
b'MSG:0'
Received packet: b'\x00\x01\x00\x01kpMSG:1'
Received seq number: 1
Expected seq number: 1
b'MSG:1'
Received packet: b'\x00\x01\x00\x00kqMSG:2'
Received seq number: 0
Expected seq number: 0
b'MSG:2'
Received packet: b'\x00\x01\x00\x01kpMSG:3'
Received seq number: 1
Expected seq number: 1
b'MSG:3'
Received packet: b'\x00\x01\x00\x00kqMSG:4'
Received seq number: 0
Expected seq number: 0
b'MSG:4'
Received packet: b'\x00\x01\x00\x01kpMSG:5'
Received seq number: 1
Expected seq number: 1
b'MSG:5'
Received packet: b'\x00\x01\x00\x00kqMSG\x5c56'
Received corrupt packet: b'\x00\x01\x00\x00kqMSG\x5c56'
Received packet: b'\x00\x01\x00\x00kqMSG:6'
Received seq number: 0
Expected seq number: 0
b'MSG:6'
Received packet: b'\x00\x01\x00\x01kp\x5b2SG:7'
Received corrupt packet: b'\x00\x01\x00\x01kp\x5b2SG:7'
Received packet: b'\x00\x01\x00\x01kpMSG:7'
Received seq number: 1
```

For file transfer :

Receiver : `rm out.<filetype> ; python3 file_receiver.py ss out.<filetype>`

Sender : `python3 file_sender.py ss <file>`

```
time.sleep(1)
KeyboardInterrupt
Amalas-MacBook-Air:skeleton amala$ ll out.csv ~/sample.csv
-rw-r--r--@ 1 amala  staff  208585 Oct 23 22:40 /Users/amala/sample.csv
-rw-r--r--  1 amala  staff  208585 Oct 30 16:06 out.csv
Amalas-MacBook-Air:skeleton amala$ md5 out.csv ~/sample.csv
MD5 (out.csv) = 8f1a1a8fae0552bc021dfa7a48ebda43
MD5 (/Users/amala/sample.csv) = 8f1a1a8fae0552bc021dfa7a48ebda43
Amalas-MacBook-Air:skeleton amala$
```

Go back N :

`python3 demo_receiver.py gbn`

Use another terminal to start the sender :

`python3 demo_sender.py gbn`

```
KeyboardInterrupt
Amalas-MacBook-Air:skeleton amala$ python3 demo_receiver.py gbn
b'MSG:0'
b'MSG:1'
b'MSG:2'
b'MSG:3'
b'MSG:4'
b'MSG:5'
b'MSG:6'
b'MSG:7'
b'MSG:8'
b'MSG:9'
b'MSG:10'
b'MSG:11'
b'MSG:12'
b'MSG:13'
b'MSG:14'
b'MSG:15'
b'MSG:16'
b'MSG:17'
b'MSG:18'
b'MSG:19'
```

For file :

Receiver : `rm out.<filetype> ; python3 file_receiver.py gbn out.<filetype>`

Sender : `python3 file_sender.py gbn <file>`

```
Amalas-MacBook-Air:skeleton amala$ ll out.png ~/promo22.png
-rw-r--r--@ 1 amala  staff  37668 Oct 26 15:44 /Users/amala/promo22.png
-rw-r--r--  1 amala  staff  37668 Oct 30 16:16 out.png
Amalas-MacBook-Air:skeleton amala$ md5 out.png ~/promo22.png
MD5 (out.png) = 9b6d491d72d3a65f680fd667231e9378
MD5 (/Users/amala/promo22.png) = 9b6d491d72d3a65f680fd667231e9378
Amalas-MacBook-Air:skeleton amala$
```

Even with 0.1 probability for bit errors there were runs for files which ended up having different md5 for the new file and the old one. First my assumption was the checksum calculation logic but I did refer to many textbooks and other online resources to verify my checksum calculation. But the case was not all bit errors were copied onto the new file but maybe 1% of it. I am still figuring out how to fix the issue.

Playing around with network parameters, like less error probability and less RTT, itself made the transaction a lot faster. Changing the network parameters: raising the bit error/lost probability, sender follows the normal gbn procedure,

```
Saving pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
Started timer for pkt with seq_number: 17
MSG:17
Saving pkt with seq_number: 18
Started timer for pkt with seq_number: 18
Started timer for pkt with seq_number: 18
Started timer for pkt with seq_number: 18
```

But at the receiver the msg 17 is corrupted. I really could not figure out why just one byte was affected by it.

```
Amalas-MacBook-Air:~$ python3 demo_receiver.py gbn
b'MSG:0'
b'MSG:1'
b'MSG:2'
b'MSG:3'
b'MSG:4'
b'MSG:5'
b'MSG:6'
b'MSG:7'
b'MSG:8'
b'MSG:9'
b'MSG:10'
b'MSG:11'
b'MSG:12'
b'MSG:13'
b'MSG:14'
b'MSG:15'
b'MSG:16'
b'MSG:17\x08'
b'MSG:18'
b'MSG:19'
```