FIRST SCREENSHOTS:

```
C:\Users\18vsa\Downloads\VSCode Projects\university-projects\Victor_Santana_PA2>python
[STARTING] Name: Victor Santana | Date and Time: 2021-04-28 23:58:11.438610

[GAIA] Awaiting response from Gaia Server...

[OK] "peer client address is (177.37.146.175, 18663)"

[CONNECTED] Client Connected To Gaia | Date and Time: 2021-04-28 23:58:11.643350
```

Sender.py Initialization and Connection

```
C:\Users\18vsa\Downloads\VSCode Projects\university-projects\Victor_Santana_PA2>python receiver.py 5678 0.0 0.2 0
[STARTING] Name: Victor Santana | Date and Time: 2021-04-28 23:58:10.773445

[GAIA] Awaiting response from Gaia Server...

[WAIT] Awaiting Receiver Connection...
[GAIA] Awaiting response from Gaia Server...

[OK] "peer client address is (177.37.146.175, 26911)0 0 When in the Course o 019940 0 When in the Course S 01994"

[CONNECTED] Client Connected To Gaia | Date and Time: 2021-04-28 23:58:21.457155
```

Receiver.py Initialization and Connection

```
--------------------------------------       --------------------------------------

[CHECKSUM] Final Checksum: 18693              [CHECKSUM] Final Checksum: 18693

[RECEIVED] 13 packets were received.          [RECEIVED] 13 packets were received.

[CORRUPT] 3 packets were corrupt.             [DUPLICATE] 1 packets were duplicates.

[TIMEOUTS] 2 timeouts occurred.               [CORRUPT] 2 received packets were corrupt.

[SENT] 15 packets were sent.                  [SENT] 13 packets were sent.

[CLOSE] Closing the socket...                 [CLOSE] Closing the socket...

[EXIT] Client now exiting...                  [EXIT] Client now exiting...
```

Final Comparison for Sender (left) and Receiver (right)

SECOND SCREENSHOTS:

```
C:\Users\18vsa\Downloads\VSCode Projects\university-projects\Victor_Santana_PA2>python sender.py 3124 0.2 0.0 0 5
[STARTING] Name: Victor Santana | Date and Time: 2021-04-29 00:03:22.738648

[GAIA] Awaiting response from Gaia Server...

[WAIT] Awaiting Receiver Connection...

[GAIA] Awaiting response from Gaia Server...

[OK] "peer client address is (177.37.146.175, 9247)"

[CONNECTED] Client Connected To Gaia | Date and Time: 2021-04-29 00:03:25.967712
```

Sender.py Initialization and Connection

```
C:\Users\18vsa\Downloads\VSCode Projects\university-projects\Victor_Santana_PA2>python receiver.py 3124 0.2 0.0 0
[STARTING] Name: Victor Santana | Date and Time: 2021-04-29 00:03:23.587176

[GAIA] Awaiting response from Gaia Server...

[OK] "peer client address is (177.37.146.175, 30231)"

[CONNECTED] Client Connected To Gaia | Date and Time: 2021-04-29 00:03:23.922979
```

Receiver.py Initialization and Connection

```
----------------------------------------

[CHECKSUM] Final Checksum: 18693

[RECEIVED] 13 packets were received.

[DUPLICATE] 3 packets were duplicates.

[CORRUPT] 0 received packets were corrupt.

[SENT] 13 packets were sent.

[CLOSE] Closing the socket...

[EXIT] Client now exiting...
```

Final Receiver.py Statistics

Final Sender.py Statistics

THIRD SCREENSHOTS

Sender.py Initialization and Connection

Receiver.py Initialization and Connection

```
----------------------------------------

[CHECKSUM] Final Checksum: 18693

[RECEIVED] 166 packets were received.

[DUPLICATE] 150 packets were duplicates.

[CORRUPT] 6 received packets were corrupt.

[SENT] 166 packets were sent.

[CLOSE] Closing the socket...

[EXIT] Client now exiting...
```

Final Receiver.py Statistics

```
----------------------------------------

[CHECKSUM] Final Checksum: 18693

[RECEIVED] 156 packets were received.

[CORRUPT] 146 packets were corrupt.

[TIMEOUTS] 89 timeouts occurred.

[SENT] 245 packets were sent.

[CLOSE] Closing the socket...

[EXIT] Client now exiting...
```

Final Sender.py Statistics

FIRST COTEST

```
CS453
Trifon Trifonov
Program 2
2021-04-28 22:27:09.806468
Launching sender.
Received reply from gaia

WAITING

OK peer client address is (24.60.207.216, 64249)

Connection established!
2021-04-28 22:28:07.336591

    1                    00817
wrong ACK received
    0                    00816
    1                    00817
    0                    00816
    1                    00817
    0                    00816
    1                    00817
    0                    00816
packet lost.
    1                    00817
    1                    00817
wrong ACK received
    0                    00816
    1        m           00817
packet corrupted.
packet lost.
packet lost.
    1                    00817


Trifon Trifonov
2021-04-28 22:28:32.183586
Checksum of text sent: 18693
Number of packets received: 13
Number of packets corrupted: 1
Number of packets lost: 3
Number of packets sent: 16
Shutting down sender.
```

Cotester Screenshot of entire program runtime as sender

```
C:\Users\18vsa\Downloads\VSCode Projects\university-projects\Victor_Santana_PA2>python receiver.py 6969 0.1 0.1 2
[STARTING] Name: Victor Santana | Date and Time: 2021-04-28 23:28:07.460312

[GAIA] Awaiting response from Gaia Server...

[OK] "peer client address is (177.37.146.175, 58322)"

[CONNECTED] Client Connected To Gaia | Date and Time: 2021-04-28 23:28:07.669625

Current ACK: 1

Expected Sequence: 0

[CORRUPT] Corrupt Packet Detected. Sending Wrong ACK...

Current ACK: 1

Expected Sequence: 0

[OK] Received Packet Correctly. Transmitting Correct ACK...
```

```
----------------------------------------

[CHECKSUM] Final Checksum: 18693

[RECEIVED] 13 packets were received.

[DUPLICATE] 0 packets were duplicates.

[CORRUPT] 3 received packets were corrupt.

[SENT] 13 packets were sent.

[CLOSE] Closing the socket...

[EXIT] Client now exiting...
```

My code output for my runtime as receiver in the first cotest

SECOND COTEST:

```
CS453
Trifon Trifonov
Program 2
2021-04-28 22:33:49.645269
Launching receiver.
Received reply from gaia

WAITING

OK peer client address is (24.60.207.216, 64333)

Connection established!
2021-04-28 22:34:11.595482

0 0 When in the Course o 01994
0 0 When in the Course o 01994
this packet is out of order.
0 0 When in the Course o 01994
this packet is out of order.
0 0 When in the Course o 01994
this packet is out of order.
0 0 When in the Course o 01994
this packet is out of order.
1 1 f human events, it b 01985
0 0 ecomes necessary for 02192
1 1  one people to disso 02062
1 1  one people to disso 02062
this packet is out of order.
0 0 lve the political ba 02092
1 1 nds which have conne 02097
0 0 cted them with anoth 02116
1 1 er, and to assume am 04975
this packet is corrupted.
1 1 er, and to assume am 01975
0 0 ong the powersNof th 02070
this packet is corrupted.
0 0 ong the powers of th 02070
1 1 e earth, the separat 02040


server closed connection.

Trifon Trifonov
2021-04-28 22:35:07.959542
Checksum of text received: 18693
Number of packets received: 17
Number of packets corrupted: 2
Number of packets sent: 17
Shutting down receiver.
>>>
```

Cotester Screenshot of entire program runtime as receiver

```
C:\Users\18vsa\Downloads\VSCode Projects\university-projects\Victor_Santana_PA2>python sender.py 6969 0.1 0.1 2 5
[STARTING] Name: Victor Santana | Date and Time: 2021-04-28 23:34:11.568484

[GAIA] Awaiting response from Gaia Server...

[OK] "peer client address is (177.37.146.175, 64486)"

[CONNECTED] Client Connected To Gaia | Date and Time: 2021-04-28 23:34:11.949170

[TEXT] Extracting Text from Document...

[CHECKSUM] Generating Checksum...
```

```
----------------------------------------

[CHECKSUM] Final Checksum: 18693

[RECEIVED] 14 packets were received.

[CORRUPT] 4 packets were corrupt.

[TIMEOUTS] 8 timeouts occurred.

[SENT] 22 packets were sent.

[CLOSE] Closing the socket...

[EXIT] Client now exiting...
```

My code output for my runtime as sender