453 Project 2 by Haoyu Guan 32006602

1.

receiver:

```
PS C:\Users\guanh\Downloads\rdt30> python.exe .\receiver.py 2424 0.0 0.2 0
Haoyu Guan 2021-04-28 00:11:22.967893
2021-04-28 00:11:25.410412 channel has been established.
When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have co
nnected them with another, and to assume among the powers of the earth, the separat
Haoyu Guan 2021-04-28 00:11:30.505040 18693
total number of packets sent 14
total number of packets received 14
number of times a corrupted message was received 1
PS C:\Users\guanh\Downloads\rdt30>
```

sender:

```
PS C:\Users\guanh\Downloads\rdt30> python.exe .\sender.py 2424 0.0 0.2 0 1
Haoyu Guan 2021-04-28 00:11:25.334238
2021-04-28 00:11:25.412814 channel has been established.
When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have c
onnected them with another, and to assume among the powers of the earth, the separat
Haoyu Guan finish at 2021-04-28 00:11:30.545134 file checksum: 18693
total number of packets sent 14
total number of packets received 14
number of times a corrupted message was received 3
number of timeouts 4
PS C:\Users\guanh\Downloads\rdt30>
```

At loss and delay =0, corrupt =0.2 for both sides, sender sends 14 packages to receiver including 1 of them are corrupted and receiver replies 14 packages with ack number and 3 of them are corrupted. So 4 of the packages are retransmitted

Sender sends first 200 characters from declaration.txt to receiver, the total checksum of that is 18693

2.

Receiver:

```
PS C:\Users\guanh\Downloads\rdt30> python.exe .\receiver.py 2424 0.2 0.0 0
Haoyu Guan 2021-04-27 21:30:29.097797
2021-04-27 21:30:29.184605 channel has been established.
When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have co
nnected them with another, and to assume among the powers of the earth, the separat
Haoyu Guan 2021-04-27 21:30:34.994701 18693
total number of packets sent 11
total number of packets received 11
number of times a corrupted message was received 0
PS C:\Users\guanh\Downloads\rdt30>
```

Sender:

```
PS C:\Users\guanh\Downloads\rdt30> python.exe .\sender.py 2424 0.2 0.0 0 1
Haoyu Guan 2021-04-27 21:30:24.999152
2021-04-27 21:30:29.184605 channel has been established.
When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have c
onnected them with another, and to assume among the powers of the earth, the separat
Haoyu Guan finish at 2021-04-27 21:30:35.033994 file checksum: 18693
total number of packets sent 15
total number of packets received 10
number of times a corrupted message was received 0
number of timeouts 5
PS C:\Users\guanh\Downloads\rdt30>
```

At corrupt and delay =0, loss rate =0.2 for both sides, sender sends 15 packages to receiver including 5 of them are lost then retransmit and receiver replies 11 packages with ack number, and 1 of them are lost then retransmitted.

Sender sends first 200 characters from declaration.txt to receiver, the total checksum of that is 18693

3.
Receiver:

```
PS C:\Users\guanh\Downloads\rdt30> python.exe .\receiver.py 2424 0.0 0.0 2
Haoyu Guan 2021-04-28 00:16:08.504883
2021-04-28 00:16:11.054860 channel has been established.
When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have co
nnected them with another, and to assume among the powers of the earth, the separat
Haoyu Guan 2021-04-28 00:16:36.696858 18693
total number of packets sent 17
total number of packets received 17
number of times a corrupted message was received 0
PS C:\Users\guanh\Downloads\rdt30>
```

Sender:

```
PS C:\Users\guanh\Downloads\rdt30> python.exe .\sender.py 2424 0.0 0.0 2 2
Haoyu Guan 2021-04-28 00:16:10.975455
2021-04-28 00:16:11.054860 channel has been established.
When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have c
onnected them with another, and to assume among the powers of the earth, the separat
Haoyu Guan finish at 2021-04-28 00:16:39.697095 file checksum: 18693
total number of packets sent 17
total number of packets received 17
number of times a corrupted message was received 0
number of timeouts 7
PS C:\Users\guanh\Downloads\rdt30>
```

At corrupt and loss =0, max delay in receiver =2 and max delay in sender=2, timeout time=2. In the worst case the package will need 2+2=4 >2 sec in the way.

sender sends 17 packages to receiver including 7 of them are time out then retransmit and receiver replies 17 packages with ack number.

It is often in this case that the sender has timeout and the receiver did receive that, the ack package is actually still on the way, so when sender timeout and retransmit the package, the receiver already got the package.

Sender sends first 200 characters from declaration.txt to receiver, the total checksum of that is 18693

4.

My sender

```
PS C:\Users\guanh\Downloads\rdt30> python.exe .\sender.py 1000 0.0 0.2 0 3
Haoyu Guan 2021-04-27 20:41:00.455243
2021-04-27 20:41:03.677027 channel has been established.
  0                  00816
  1                  00817
  1                  00817
  0                  00816
  1                  00817
  0                  00816
  1                  00817
  1                  00817
  0                  00816
  1                  00817
  0                  00816
  1                  00817
Haoyu Guan 2021-04-27 20:41:04.327626 18693
total number of packets sent 12 total number of packets received 12 number of times a corrupted message was received 0 n
umber of timeouts 0
```

Song's receiver:

```
PS C:\Users\Song Chen\Downloads\453p2> python receiver.py 1000 0 0 0
start:  2021-04-27 20:41:03.038214 Song Chen
connected:  2021-04-27 20:41:03.063358
end:  2021-04-27 20:41:08.696662 Song Chen
 12  packages received
 2   corrupted
 18693 checksum
 When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among th
e powers of the earth, the separat
PS C:\Users\Song Chen\Downloads\453p2>
```

At loss and delay =0, corrupt =0.2 in my sender sides, sender sends 12 packages to receiver
including 2 of them are corrupted then retransmits and receiver replies 12 packages with ack.
Sender sends first 200 characters from declaration.txt to receiver, the total checksum of that is
18693

5.

My receiver:

```
PS C:\Users\guanh\Downloads\rdt30> python.exe .\receiver.py 1000 0.0 0.0 0
Haoyu Guan 2021-04-27 20:39:22.637640
2021-04-27 20:39:23.589919 channel has been established.
0 1 When in the Course o 01995
1 0 f human events, it b 01984
0 1 ecomes necessary for 02193
1 0  one people to disso 02061
0 1 lve the political ba 02093
1 0 nds which have conne 02096
0 1 cted them with anoth 02117
1 0 er, and to assume am 01974
0 1 ong the powers of th 02071
1 0 e earth, the separat 02039
Haoyu Guan 2021-04-27 20:39:24.107108 18693
total number of packets sent 10 total number of packets received 10 number of times a corrupted message was received
0
```

Song's sender:

```
PS C:\Users\Song Chen\Downloads\453p2> python sender.py 1000 0 0 0 1
start:  2021-04-27 20:39:22.944825 Song Chen
connected:  2021-04-27 20:39:22.976165
end:  2021-04-27 20:39:23.539267
 10  packages sent
 0   corrupted
 0 timeout
 18693 checksum

PS C:\Users\Song Chen\Downloads\453p2> 
```

At loss,corrupt and delay =0 for both sides, sender sends 10 packages to receiver and receiver replies 10 packages with ack.

Sender sends first 200 characters from declaration.txt to receiver, the total checksum of that is 18693