computer network homework

step 1

```
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$ python3 client1.py
Input the job you want to do:
calc
Input math expression:
5+2
is there any job you want to do?(y/n)y
Input the job you want to do:
dns
Input which IP of domain name you want get:
google.com
---------3 way handshake start--------------
SYN send to (IP,port):  DESKTOP-5LRS0K1  ,  12345  with seq:  7286
SYN/ACK receive from (IP,port):  ('127.0.1.1', 12346)  with ack seq:  7287  seq:  7407
request send to (IP,port): ('127.0.1.1', 12346)
---------3 way handshake done--------------
================================================
receive packet from  ('127.0.1.1', 12346) with seq 7408
client  0  accept packet from server ('127.0.1.1', 12346) :
 result of 5+2 is 7
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  7409  and seq:  7288
================================================
receive packet from  ('127.0.1.1', 12346) with seq 7409
client  0  accept packet from server ('127.0.1.1', 12346) :
 IP of google.com is 172.217.27.142
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  7410  and seq:  7289
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$
```

```
dealing with math claculation
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$ python3 udpserverMulticlient.py
[2021-06-15 18:38:37] Creating socket...
[2021-06-15 18:38:37] Socket created
[2021-06-15 18:38:37] Binding server to DESKTOP-5LRS0K1:12345...
[2021-06-15 18:38:37] Server binded to DESKTOP-5LRS0K1:12345
<socket.socket fd=3, family=AddressFamily.AF_INET, type=SocketKind.SOCK_DGRAM, proto=0, laddr=('127.0.1.1', 12345)>
Waiting for client...
Received!
Waiting for client...
SYN accept form (IP,port):  ('127.0.0.1', 33726)  with client seq 7286
SYN/ACK send to (IP,port):  ('127.0.0.1', 33726)  with seq:  7407
['calc', '5+2', 'dns', 'google.com']
================================================
dealing with math claculation
send a packet to  ('127.0.0.1', 33726) with server seq : 7408
recive ACK from : ('127.0.0.1', 33726) with ack seq:  7409  and client seq:  7288
================================================
dealing with dns request
send a packet to  ('127.0.0.1', 33726) with server seq : 7409
recive ACK from : ('127.0.0.1', 33726) with ack seq:  7410  and client seq:  7289
```

step 1-video

```
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$ python3 client1.py
Input the job you want to do:
video
Input which video you want:
1
is there any job you want to do?(y/n)n
```

```
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$ python3 udpserverMulticlient.py
[2021-06-15 18:41:30] Creating socket...
[2021-06-15 18:41:30] Socket created
[2021-06-15 18:41:30] Binding server to DESKTOP-5LRS0K1:12345...
[2021-06-15 18:41:30] Server binded to DESKTOP-5LRS0K1:12345
<socket.socket fd=3, family=AddressFamily.AF_INET, type=SocketKind.SOCK_DGRAM, proto=0, laddr=('127.0.1.1', 12345)>
Waiting for client...


ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  10859  and seq:  5574
receive packet from  ('127.0.1.1', 12346) with seq 10859
receive packet from  ('127.0.1.1', 12346) with seq 10860
receive packet from  ('127.0.1.1', 12346) with seq 10861
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  10862  and seq:  5575
receive packet from  ('127.0.1.1', 12346) with seq 10862
receive packet from  ('127.0.1.1', 12346) with seq 10863
receive packet from  ('127.0.1.1', 12346) with seq 10864
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  10865  and seq:  5576
receive packet from  ('127.0.1.1', 12346) with seq 10865
receive packet from  ('127.0.1.1', 12346) with seq 10866
receive packet from  ('127.0.1.1', 12346) with seq 10867
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  10868  and seq:  5577
receive packet from  ('127.0.1.1', 12346) with seq 10868
receive packet from  ('127.0.1.1', 12346) with seq 10869
receive packet from  ('127.0.1.1', 12346) with seq 10870
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  10871  and seq:  5578
receive packet from  ('127.0.1.1', 12346) with seq 10871
receive packet from  ('127.0.1.1', 12346) with seq 10872
receive packet from  ('127.0.1.1', 12346) with seq 10873
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  10874  and seq:  5579
receive packet from  ('127.0.1.1', 12346) with seq 10874
receive packet from  ('127.0.1.1', 12346) with seq 10875
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  10876  and seq:  5580
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$
```

```
recive ACK from : ('127.0.0.1', 56369) with ack seq:  10862  and client seq:  5575
send a packet to  ('127.0.0.1', 56369) with server seq : 10862
send a packet to  ('127.0.0.1', 56369) with server seq : 10863
send a packet to  ('127.0.0.1', 56369) with server seq : 10864
recive ACK from : ('127.0.0.1', 56369) with ack seq:  10865  and client seq:  5576
send a packet to  ('127.0.0.1', 56369) with server seq : 10865
send a packet to  ('127.0.0.1', 56369) with server seq : 10866
send a packet to  ('127.0.0.1', 56369) with server seq : 10867
recive ACK from : ('127.0.0.1', 56369) with ack seq:  10868  and client seq:  5577
send a packet to  ('127.0.0.1', 56369) with server seq : 10868
send a packet to  ('127.0.0.1', 56369) with server seq : 10869
send a packet to  ('127.0.0.1', 56369) with server seq : 10870
recive ACK from : ('127.0.0.1', 56369) with ack seq:  10871  and client seq:  5578
send a packet to  ('127.0.0.1', 56369) with server seq : 10871
send a packet to  ('127.0.0.1', 56369) with server seq : 10872
send a packet to  ('127.0.0.1', 56369) with server seq : 10873
recive ACK from : ('127.0.0.1', 56369) with ack seq:  10874  and client seq:  5579
send a packet to  ('127.0.0.1', 56369) with server seq : 10874
send a packet to  ('127.0.0.1', 56369) with server seq : 10875
recive ACK from : ('127.0.0.1', 56369) with ack seq:  10876  and client seq:  5580
```

step 2

```
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$ python3 client1.py
Input the job you want to do:
calc
Input math expression:
5+2
is there any job you want to do?(y/n)n
---------3 way handshake start--------------
SYN send to (IP,port):  DESKTOP-5LRS0K1  ,  12345  with seq:  9309
SYN/ACK receive from (IP,port):  ('127.0.1.1', 12346)  with ack seq:  9310  seq:  4444
request send to (IP,port): ('127.0.1.1', 12346)
---------3 way handshake done---------------
==============================================
Input the job you want to do:
receive packet from  ('127.0.1.1', 12346) with seq 4445
client  0  accept packet from server ('127.0.1.1', 12346) :
 result of 5+2 is 7
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  4446  and seq:  9311
calc
Input math expression:
52+1
is there any job you want to do?(y/n)n
---------3 way handshake start--------------
SYN send to (IP,port):  DESKTOP-5LRS0K1  ,  12345  with seq:  8767
SYN/ACK receive from (IP,port):  ('127.0.1.1', 12346)  with ack seq:  8768  seq:  2462
request send to (IP,port): ('127.0.1.1', 12346)
---------3 way handshake done---------------
==============================================
receive packet from  ('127.0.1.1', 12346) with seq 2463
client  1  accept packet from server ('127.0.1.1', 12346) :
 result of 52+1 is 53
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  2464  and seq:  8769
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$ python3 udpserverMulticlient.py
[2021-06-15 18:44:07] Creating socket...
[2021-06-15 18:44:07] Socket created
[2021-06-15 18:44:07] Binding server to DESKTOP-5LRS0K1:12345...
[2021-06-15 18:44:07] Server binded to DESKTOP-5LRS0K1:12345
<socket.socket fd=3, family=AddressFamily.AF_INET, type=SocketKind.SOCK_DGRAM, proto=0, laddr=('127.0.1.1', 12345)>
Waiting for client...
Received!
Waiting for client...
SYN accept form (IP,port):  ('127.0.0.1', 44381)  with client seq 9309
SYN/ACK send to (IP,port):  ('127.0.0.1', 44381)  with seq:  4444
['calc', '5+2']
==========================================
dealing with math claculation
send a packet to  ('127.0.0.1', 44381) with server seq : 4445
recive ACK from : ('127.0.0.1', 44381) with ack seq:  4446  and client seq:  9311
Received!
Waiting for client...
SYN accept form (IP,port):  ('127.0.0.1', 47872)  with client seq 8767
SYN/ACK send to (IP,port):  ('127.0.0.1', 47872)  with seq:  2462
['calc', '52+1']
==========================================
dealing with math claculation
send a packet to  ('127.0.0.1', 47872) with server seq : 2463
recive ACK from : ('127.0.0.1', 47872) with ack seq:  2464  and client seq:  8769
```

step 3

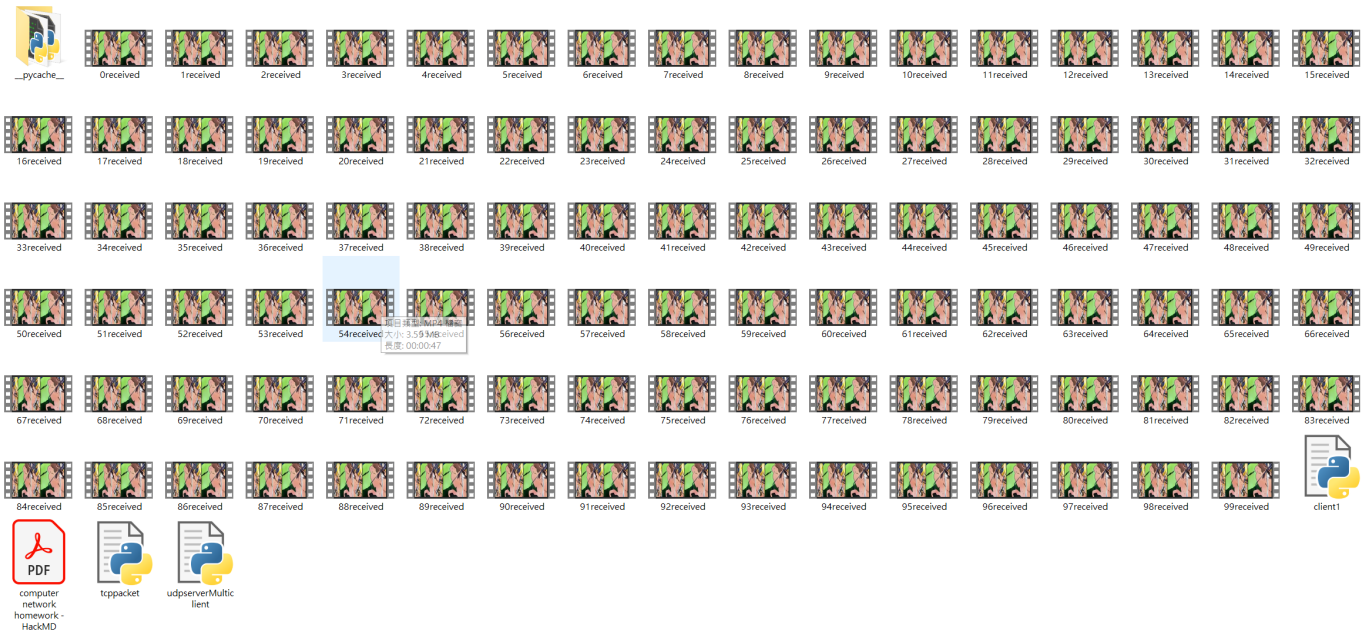
please see picture in step 1

step 4

```
is there any job you want to do?(y/n)y
Input the job you want to do:
calc
Input math expression:
5+2
is there any job you want to do?(y/n)y
Input the job you want to do:
dns
Input which IP of domain name you want get:
google.com
is there any job you want to do?(y/n)y
Input the job you want to do:
calc
Input math expression:
1+1
is there any job you want to do?(y/n)n
---------3 way handshake start--------------
SYN send to (IP,port):  DESKTOP-5LRS0K1  ,  12345  with seq:  471
SYN/ACK receive from (IP,port):  ('127.0.1.1', 12346)  with ack seq:  472  seq:  4606
request send to (IP,port): ('127.0.1.1', 12346)
---------3 way handshake done---------------
================================================
receive packet from  ('127.0.1.1', 12346) with seq 4607
client  0  accept packet from server ('127.0.1.1', 12346) :
 result of 5**2+2+1+100/20+100**0.5 is 43.0
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  4608  and seq:  473
================================================
receive packet from  ('127.0.1.1', 12346) with seq 4608
but the packet from  ('127.0.1.1', 12346) with WRONG checksum  ack seq:  474  and seq:  4608
client  0  accept packet from server ('127.0.1.1', 12346) :
 result of 5+2 is 7
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  4609  and seq:  474
================================================
receive packet from  ('127.0.1.1', 12346) with seq 4609
but the packet from  ('127.0.1.1', 12346) with WRONG checksum  ack seq:  475  and seq:  4609
client  0  accept packet from server ('127.0.1.1', 12346) :
 IP of google.com is 172.217.160.78
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  4610  and seq:  475
================================================
receive packet from  ('127.0.1.1', 12346) with seq 4610
client  0  accept packet from server ('127.0.1.1', 12346) :
 result of 1+1 is 2
ACK send to (IP,port): ('127.0.1.1', 12346) with ack seq:  4611  and seq:  476
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$ python3 udpserverMulticlient.py
[2021-06-15 18:49:38] Creating socket...
[2021-06-15 18:49:38] Socket created
[2021-06-15 18:49:38] Binding server to DESKTOP-5LRS0K1:12345...
[2021-06-15 18:49:38] Server binded to DESKTOP-5LRS0K1:12345
<socket.socket fd=3, family=AddressFamily.AF_INET, type=SocketKind.SOCK_DGRAM, proto=0, laddr=('127.0.1.1', 12345)>
Waiting for client...
Received!
Waiting for client...
SYN accept form (IP,port):  ('127.0.0.1', 60074)  with client seq 471
SYN/ACK send to (IP,port):  ('127.0.0.1', 60074)  with seq:  4606
['calc', '5**2+2+1+100/20+100**0.5', 'calc', '5+2', 'dns', 'google.com', 'calc', '1+1']
================================================
dealing with math claculation
send a packet to  ('127.0.0.1', 60074) with server seq : 4607
recive ACK from : ('127.0.0.1', 60074) with ack seq:  4608  and client seq:  473
================================================
dealing with math claculation
send a packet to  ('127.0.0.1', 60074) with server seq : 4608
recive ACK from : ('127.0.0.1', 60074) with ack seq:  4609  and client seq:  474
================================================
dealing with dns request
send a packet to  ('127.0.0.1', 60074) with server seq : 4609
recive ACK from : ('127.0.0.1', 60074) with ack seq:  4610  and client seq:  475
but the packet from  ('127.0.0.1', 60074) with WRONG checksum  ack seq:  4610  and seq:  475
================================================
dealing with math claculation
send a packet to  ('127.0.0.1', 60074) with server seq : 4610
recive ACK from : ('127.0.0.1', 60074) with ack seq:  4611  and client seq:  476
but the packet from  ('127.0.0.1', 60074) with WRONG checksum  ack seq:  4611  and seq:  476
```

step 5

please see picture in step 1-video

step 9

```
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$ sha256sum *.mp4 ../1.mp4 | awk '{print $1}' | uniq
2d84bc64b2e81b257eea50841b715f00e6f8d2e5b0f1af4e5b4a6738aff9800d
zhang@DESKTOP-5LRS0K1:/mnt/d/VScodeWorkSpace/college/computer_network_class/computer_network/B073040025$ sha256sum *.mp4 ../1.mp4 | awk '{print $1}' | wc -l
101
```