

How is the file structured?

This zip file contains two folders:

- client
- server

There are three source file and one exe file in each of them:

- client
 - ClientHelper.c
 - ClientHelper.h
 - udpClient2.c
 - a.out
- server
 - ServerHelper.c
 - ServerHelper.h
 - udpServer2.c
 - a.out

udpClient2.c and udpServer2.c contain main function.

How to compile files?

Open two terminals, one is for server, the other is for client.

```
gcc udpServer2.c ServerHelper.c
gcc udpClient2.c ClientHelper.c
```

How to run the file?

Run server program first, then client program.

```
(in server folder terminal) ./a.out
(in client folder terminal) ./a.out
```

Test result:

This is for ACK case.

```
1. ./a.out (a.out)
owen@linyouchengdeMacBook-Pro-2 server gcc udpServer2.c ServerHelper.c
owen@linyouchengdeMacBook-Pro-2 server ./a.out
--- I got a message from client!
ACK.
--- I got a message from client!
ACK.
--- I got a message from client!
ACK.
--- I got a message from client!
ACK.
--- I got a message from client!
ACK.
[]

2. owen@linyouchengdeMacBook-Pro-2: ~/Documents/US/US course/2_Computer Networks/C...
owen@linyouchengdeMacBook-Pro-2 client gcc udpClient2.c ClientHelper.c
owen@linyouchengdeMacBook-Pro-2 client ./a.out
Send packet 1 to Server.
*** Receive ACK.
Send packet 2 to Server.
*** Receive ACK.
Send packet 3 to Server.
*** Receive ACK.
Send packet 4 to Server.
*** Receive ACK.
Send packet 5 to Server.
*** Receive ACK.
End of the program
owen@linyouchengdeMacBook-Pro-2 client
```

Server does not respond.

```
1. owen@linyouchengdeMacBook-Pro-2: ~/Documents/US/US course/2_Computer Networks/C...
owen@linyouchengdeMacBook-Pro-2 server []

2. owen@linyouchengdeMacBook-Pro-2: ~/Documents/US/US course/2_Computer Networks/C...
owen@linyouchengdeMacBook-Pro-2 client ./a.out
Send packet 1 to Server.
Resend packet to server 1
Resend packet to server 2
Resend packet to server 3
Server does not respond.
End of the program
owen@linyouchengdeMacBook-Pro-2 client
```

This is for the received packet at server that is not in sequence.

udpClient2.c – line 60 uncomment

```
1. ./a.out (a.out)
owen@linyouchengdeMacBook-Pro-2 server ./a.out
--- I got a message from client!
ACK.
--- I got a message from client!
ACK.
--- I got a message from client!
ACK.
--- I got a message from client!
ACK.
Wrong Sequence!
[]

2. owen@linyouchengdeMacBook-Pro-2: ~/Documents/US/US course/2_Computer Networks/C...
owen@linyouchengdeMacBook-Pro-2 client gcc udpClient2.c ClientHelper.c
owen@linyouchengdeMacBook-Pro-2 client ./a.out
Send packet 1 to Server.
*** Receive ACK.
Send packet 2 to Server.
*** Receive ACK.
Send packet 3 to Server.
*** Receive ACK.
Send packet 4 to Server.
*** Receive ACK.
Send packet 5 to Server.
Change the pack sequence.
*** REJECTOutOfSequence
End of the program
owen@linyouchengdeMacBook-Pro-2 client
```

This is the length mismatch.

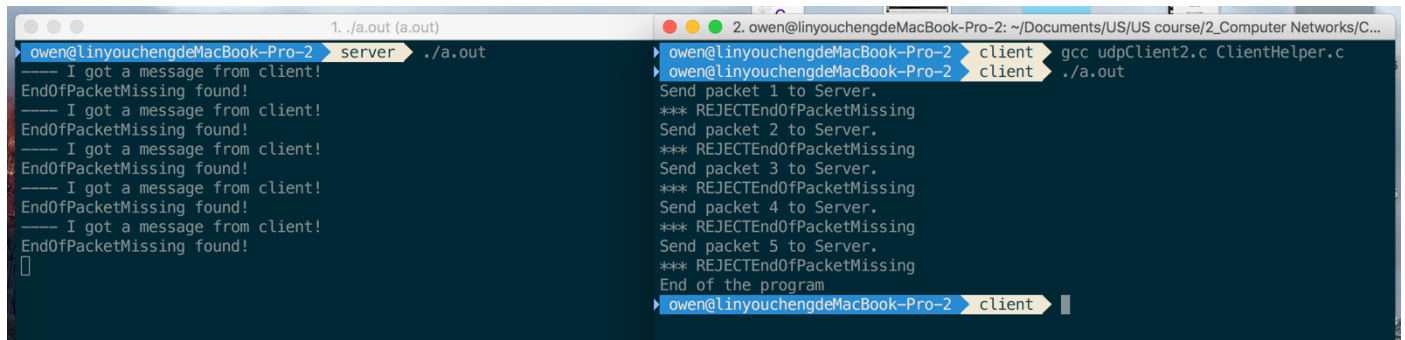
ClientHelper.c – line 134 comment out, 133 uncomment

```
1. ./a.out (a.out)
owen@linyouchengdeMacBook-Pro-2 server ./a.out
--- I got a message from client!
LengthMismatch found!
--- I got a message from client!
LengthMismatch found!
--- I got a message from client!
LengthMismatch found!
--- I got a message from client!
LengthMismatch found!
--- I got a message from client!
LengthMismatch found!
[]

2. owen@linyouchengdeMacBook-Pro-2: ~/Documents/US/US course/2_Computer Networks/C...
owen@linyouchengdeMacBook-Pro-2 client gcc udpClient2.c ClientHelper.c
owen@linyouchengdeMacBook-Pro-2 client ./a.out
Send packet 1 to Server.
*** REJECTLengthMismatch
Send packet 2 to Server.
*** REJECTLengthMismatch
Send packet 3 to Server.
*** REJECTLengthMismatch
Send packet 4 to Server.
*** REJECTLengthMismatch
Send packet 5 to Server.
*** REJECTLengthMismatch
End of the program
owen@linyouchengdeMacBook-Pro-2 client
```

Missing end identifier.

ClientHelper.c – line 143 comment out

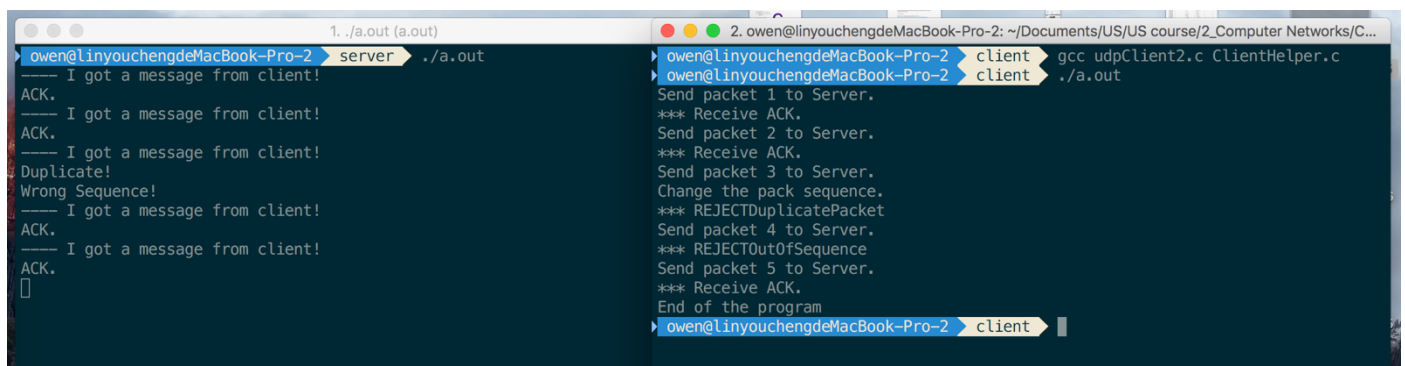


```
1. ./a.out (a.out)
> owen@linyouchengdeMacBook-Pro-2 server > ./a.out
----- I got a message from client!
EndOfPacketMissing found!
----- I got a message from client!
EndOfPacketMissing found!
----- I got a message from client!
EndOfPacketMissing found!
----- I got a message from client!
EndOfPacketMissing found!
----- I got a message from client!
EndOfPacketMissing found!
[]

2. owen@linyouchengdeMacBook-Pro-2: ~/Documents/US/US course/2_Computer Networks/C...
> owen@linyouchengdeMacBook-Pro-2 client > gcc udpClient2.c ClientHelper.c
> owen@linyouchengdeMacBook-Pro-2 client > ./a.out
Send packet 1 to Server.
*** REJECTEndOfPacketMissing
Send packet 2 to Server.
*** REJECTEndOfPacketMissing
Send packet 3 to Server.
*** REJECTEndOfPacketMissing
Send packet 4 to Server.
*** REJECTEndOfPacketMissing
Send packet 5 to Server.
*** REJECTEndOfPacketMissing
End of the program
> owen@linyouchengdeMacBook-Pro-2 client > |
```

Duplicate packet.

udpClient2.c – line 66 uncomment



```
1. ./a.out (a.out)
> owen@linyouchengdeMacBook-Pro-2 server > ./a.out
ACK.
----- I got a message from client!
ACK.
----- I got a message from client!
Duplicate!
Wrong Sequence!
----- I got a message from client!
ACK.
----- I got a message from client!
ACK.
----- I got a message from client!
[]

2. owen@linyouchengdeMacBook-Pro-2: ~/Documents/US/US course/2_Computer Networks/C...
> owen@linyouchengdeMacBook-Pro-2 client > gcc udpClient2.c ClientHelper.c
> owen@linyouchengdeMacBook-Pro-2 client > ./a.out
Send packet 1 to Server.
*** Receive ACK.
Send packet 2 to Server.
*** Receive ACK.
Send packet 3 to Server.
Change the pack sequence.
*** REJECTDuplicatePacket
Send packet 4 to Server.
*** REJECTOutOfSequence
Send packet 5 to Server.
*** Receive ACK.
End of the program
> owen@linyouchengdeMacBook-Pro-2 client > |
```