

PROGRAMMING ASSIGNMENT

Pre-requisites:

Install gcc for C program compiler

Steps:

1. Copy the files 'client.c', 'server.c', 'fcs.h' and 'packet_payload.txt' to the desired location.
2. Run the below commands to compile the C programs:

```
gcc server.c -o server  
gcc client.c -o client  
gcc fcs.h -o fcs
```
3. First the server should be started. To start the server, run:

```
./server
```
4. In a new terminal window, run below for running the client program:

```
./client
```
5. Packets would start transmitting and output would be visible

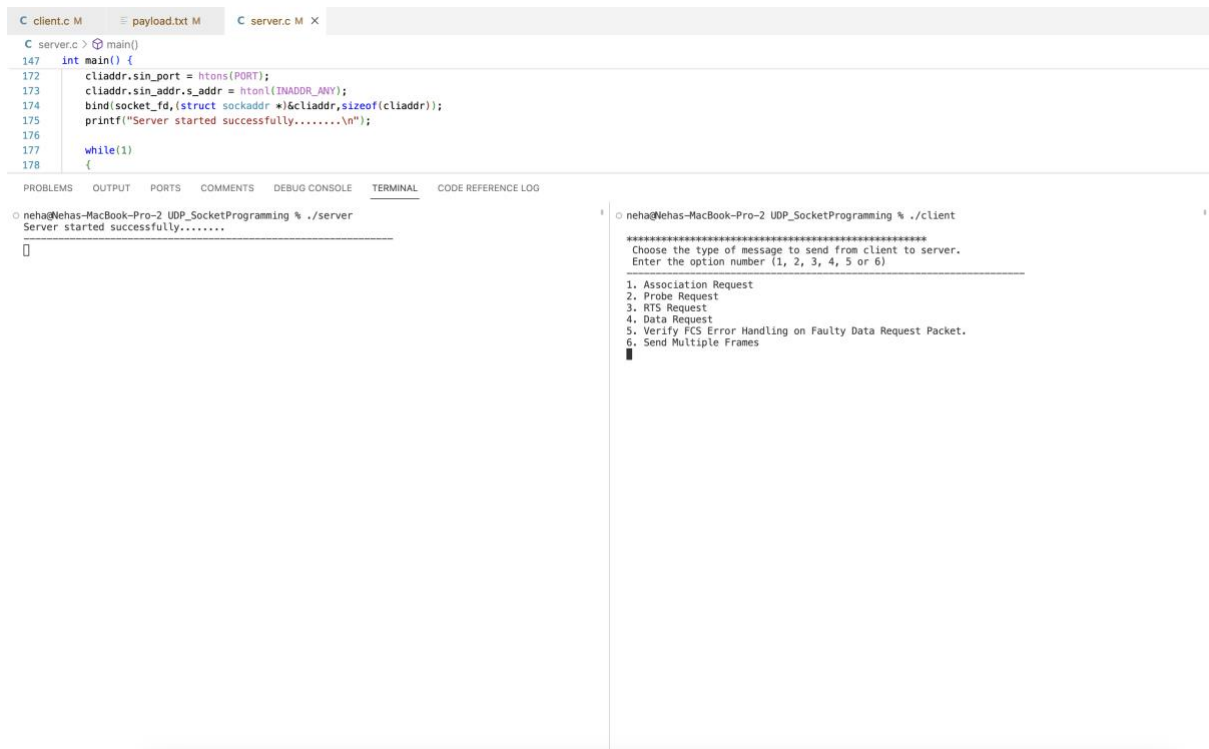
Description:

File **client.c** is responsible for creating request packets and sending them to the server/access point.

File **server.c** is responsible for receiving request packets and processing them and responding back with respective response packets.

File **fcs.h** is the header file that contains the logic for Frame Check Sequence calculation for the data packets. FCS calculation and verification is done in both client and access point side. The verification is done before and after the frame is sent and received respectively.

At the client side, a user menu with options for different type of packets to be sent to server/AP is displayed.



The screenshot shows a code editor with three tabs: 'client.c M', 'payload.txt M', and 'server.c M X'. The 'server.c' file is open, showing a C program that listens on a port and prints a success message. Below the code editor is a terminal window with two panes. The left pane shows the command 'neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./server' and the output 'Server started successfully.....'. The right pane shows the command 'neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client' and a menu of options for the client to send to the server.

```

C server.c > main()
147 int main() {
172     cliaddr.sin_port = htons(PORT);
173     cliaddr.sin_addr.s_addr = htonl(INADDR_ANY);
174     bind(socket_fd, (struct sockaddr *)&cliaddr, sizeof(cliaddr));
175     printf("Server started successfully.....\n");
176
177     while(1)
178     {
PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE TERMINAL CODE REFERENCE LOG
neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./server
Server started successfully.....
neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client
*****
Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)
-----
1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames

```

Then as per the options selected, the client sends a packet to the server and the server responds accordingly.

1. Association Request and Response

```

PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE TERMINAL CODE REFERENCE LOG
neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./server
Server started successfully.....

Packet recieved from client.....

-----Packet Information-----
Address 1: AABBCDDEED0
Address 2: 1245CCDDEE88
Address 3: AABBCDDEED0
Address 4: 000000000000
Type: 0
Sub Type: 0
FCS: 3650527952
Duration ID: 0
Sequence Control: 0

*****
Sending Association Response...
Response sent with correct FCS:

-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEED0
Address 3: AABBCDDEED0
Address 4: 000000000000
Type: 0
Sub Type: 1
FCS: 751588294
Duration ID: 43981
Sequence Control: 0

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client
*****
Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)

1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames
1
Sending Association Request to Server.....

-----Packet Information-----
Address 1: AABBCDDEED0
Address 2: 1245CCDDEE88
Address 3: AABBCDDEED0
Address 4: 000000000000
Type: 0
Sub Type: 0
FCS: 3650527952
Duration ID: 0
More Fragments: 1
Sequence Control: 0

Response from Server : Received frame with valid FCS.

-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEED0
Address 3: AABBCDDEED0
Address 4: 000000000000
Type: 0
Sub Type: 1
FCS: 751588294
Duration ID: 43981
More Fragments: 0
Sequence Control: 0

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

```

2. Probe Request and Response

```

PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE TERMINAL CODE REFERENCE LOG
neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./server
Server started successfully.....

Packet recieved from client.....

-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEED0
Address 3: AABBCDDEED0
Address 4: 000000000000
Type: 0
Sub Type: 1
FCS: 751588294
Duration ID: 43981
Sequence Control: 0

*****
Sending Probe Response...
Response sent with correct FCS:

-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEED0
Address 3: AABBCDDEED0
Address 4: 000000000000
Type: 0
Sub Type: 0
FCS: 1326819792
Duration ID: 43981
Sequence Control: 0

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client
*****
Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)

1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames
2
Sending Probe Request to Server.....

-----Packet Information-----
Address 1: AABBCDDEED0
Address 2: 1245CCDDEE88
Address 3: AABBCDDEED0
Address 4: 000000000000
Type: 0
Sub Type: 4
FCS: 4147558183
Duration ID: 0
More Fragments: 0
Sequence Control: 0

Response from Server : Received frame with valid FCS.

-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEED0
Address 3: AABBCDDEED0
Address 4: 000000000000
Type: 0
Sub Type: 0
FCS: 1326819792
Duration ID: 43981
More Fragments: 0
Sequence Control: 0

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

```

3. RTS and CTS

```

PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE TERMINAL CODE REFERENCE LOG

-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 0
Sub Type: 0
FCS: 1326819792
Duration ID: 43981
Sequence Control: 0

-----
Packet recieved from client.....
-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 11
FCS: 3496362946
Duration ID: 4
Sequence Control: 0

*****
Sending CTS Response...
Response sent with correct FCS:
-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 12
FCS: 939514320
Duration ID: 3
Sequence Control: 0

-----

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client

*****
Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)

1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames
3
Sending RTS Request to Server.....

-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 11
FCS: 3496362946
Duration ID: 4
More fragments: 0
Sequence Control: 0

-----
Response from Server : Received frame with valid FCS.

-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 12
FCS: 939514320
Duration ID: 3
More fragments: 0
Sequence Control: 0

-----

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

```

4. Data Packet and ACK

```

PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE TERMINAL CODE REFERENCE LOG

-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 12
FCS: 939514320
Duration ID: 3
Sequence Control: 0

-----
Packet recieved from client.....
-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 2
Sub Type: 0
FCS: 1445185676
Duration ID: 2
Sequence Control: 0

-----
Sending ACK Response...
Response sent with correct FCS:
-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 13
FCS: 631261968
Duration ID: 1
Sequence Control: 0

-----

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client

*****
Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)

1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames
4
Sending Data Packet to Server.....

-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 2
Sub Type: 0
FCS: 1445185676
Duration ID: 2
More fragments: 1
Sequence Control: 0

-----
Response from Server : Received frame with valid FCS.

-----Packet Information-----
Address 1: 1245CCDDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 13
FCS: 631261968
Duration ID: 1
More fragments: 0
Sequence Control: 0

-----

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

```

5. FCS Error Handling

```

PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE TERMINAL CODE REFERENCE LOG
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 0
Sub Type: 0
FCS: 4294967295
Duration ID: 29484
Sequence Control: 0

*****
Error: FCS (Frame Check Sequence) Error.

Packet recieved from client.....

-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEEB8
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 2
Sub Type: 0
FCS: 770302671
Duration ID: 2
Sequence Control: 0

*****
Sending ACK Response...

Response sent with correct FCS:

-----Packet Information-----
Address 1: 1245CCDDEEB8
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 1
Sub Type: 13
FCS: 1564515202
Duration ID: 1
Sequence Control: 0

-----
Packet recieved from client.....

-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEEB8
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 0
Sub Type: 0
FCS: 4294967295
Duration ID: 29484
Sequence Control: 0

*****
Error: FCS (Frame Check Sequence) Error.

```

```

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client

*****
Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)

1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames
Data Packet sent to Server.....

-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEEB8
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 2
Sub Type: 0
FCS: 770302671
Duration ID: 2
More Fragments: 0
Sequence Control: 0

-----
Response from Server : ACK received for valid frame

-----Packet Information-----
Address 1: 1245CCDDEEB8
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 1
Sub Type: 13
FCS: 1564515202
Duration ID: 1
More Fragments: 0
Sequence Control: 0

-----
Sending Invalid data packet request

-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEEB8
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 0
Sub Type: 0
FCS: 4294967295
Duration ID: 29484
More Fragments: 0
Sequence Control: 0

```

6. Sending multiple fragmented frames

```

PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE TERMINAL CODE REFERENCE LOG
neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./server
Server started successfully.....

Packet recieved from client.....

-----Packet Information-----
Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEEB8
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 1
Sub Type: 11
FCS: 94557551
Duration ID: 12
Sequence Control: 0
Sending CTS Response...

Response sent with correct FCS:

-----Packet Information-----
Start of Packet: 65535
End of Packet: 65535
Address 1: 1245CCDDEEB8
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 1
Sub Type: 12
FCS: 3865187411
Duration ID: 11
Sequence Control: 0
Packet recieved from client.....

-----Packet Information-----
Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEEB8
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 2
Sub Type: 0
FCS: 3624371467
Duration ID: 12
Sequence Control: 32
Sending ACK Response...

Response sent with correct FCS:

-----Packet Information-----
Start of Packet: 65535
End of Packet: 65535
Address 1: 1245CCDDEEB8
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 1
Sub Type: 13
FCS: 507102265
Duration ID: 11
Sequence Control: 32
Packet recieved from client.....

```

```

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client

*****
Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)

1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames
RTS frame sent to server....

-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEEB8
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 1
Sub Type: 11
FCS: 94557551
Duration ID: 12
More Fragments: 0
Sequence Control: 0

-----
Response from Server : CTS frame recieved from server.....

-----Packet Information-----
Address 1: 1245CCDDEEB8
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 1
Sub Type: 12
FCS: 3865187411
Duration ID: 11
More Fragments: 0
Sequence Control: 0

-----
Sending fragmented frames to server.....
Total fragmented frames sent: 10

```

CSEN 331 Wireless and Mobile Networks

PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE TERMINAL CODE REFERENCE LOG

Packet recieved from client.....

-----Packet Information-----

Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 2
Sub Type: 0
FCS: 2467664744
Duration ID: 11
Sequence Control: 33

Sending ACK Response...

Response sent with correct FCS:

-----Packet Information-----

Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 13
FCS: 518849119
Duration ID: 10
Sequence Control: 33

Packet recieved from client.....

-----Packet Information-----

Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 2
Sub Type: 0
FCS: 1048485255
Duration ID: 10
Sequence Control: 34

Sending ACK Response...

Response sent with correct FCS:

-----Packet Information-----

Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 13
FCS: 492322793
Duration ID: 9
Sequence Control: 34

Packet recieved from client.....

-----Packet Information-----

Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client

Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)

1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames

RTS frame sent to server....

-----Packet Information-----

Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 11
FCS: 94557551
Duration ID: 12
More Fragments: 0
Sequence Control: 0

Response from Server : CTS frame recieved from server.....

-----Packet Information-----

Address 1: 1245CCDDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 12
FCS: 3865187411
Duration ID: 11
More Fragments: 0
Sequence Control: 0

Sending fragmented frames to server.....
Total Fragmented Frames sent: 10

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE TERMINAL CODE REFERENCE LOG

-----Packet Information-----

Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 2
Sub Type: 0
FCS: 223893151
Duration ID: 9
Sequence Control: 35

Sending ACK Response...

Response sent with correct FCS:

-----Packet Information-----

Start of Packet: 65535
End of Packet: 65535
Address 1: 1245CCDDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 13
FCS: 737690087
Duration ID: 8
Sequence Control: 35

Packet recieved from client.....

-----Packet Information-----

Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 2
Sub Type: 0
FCS: 288096415
Duration ID: 8
Sequence Control: 36

Sending ACK Response...

Response sent with correct FCS:

-----Packet Information-----

Start of Packet: 65535
End of Packet: 65535
Address 1: 1245CCDDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 13
FCS: 2589543916
Duration ID: 7
Sequence Control: 36

Packet recieved from client.....

-----Packet Information-----

Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client

Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)

1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames

RTS frame sent to server....

-----Packet Information-----

Address 1: AABBCDDEEDD
Address 2: 1245CCDDEE88
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 11
FCS: 94557551
Duration ID: 12
More Fragments: 0
Sequence Control: 0

Response from Server : CTS frame recieved from server.....

-----Packet Information-----

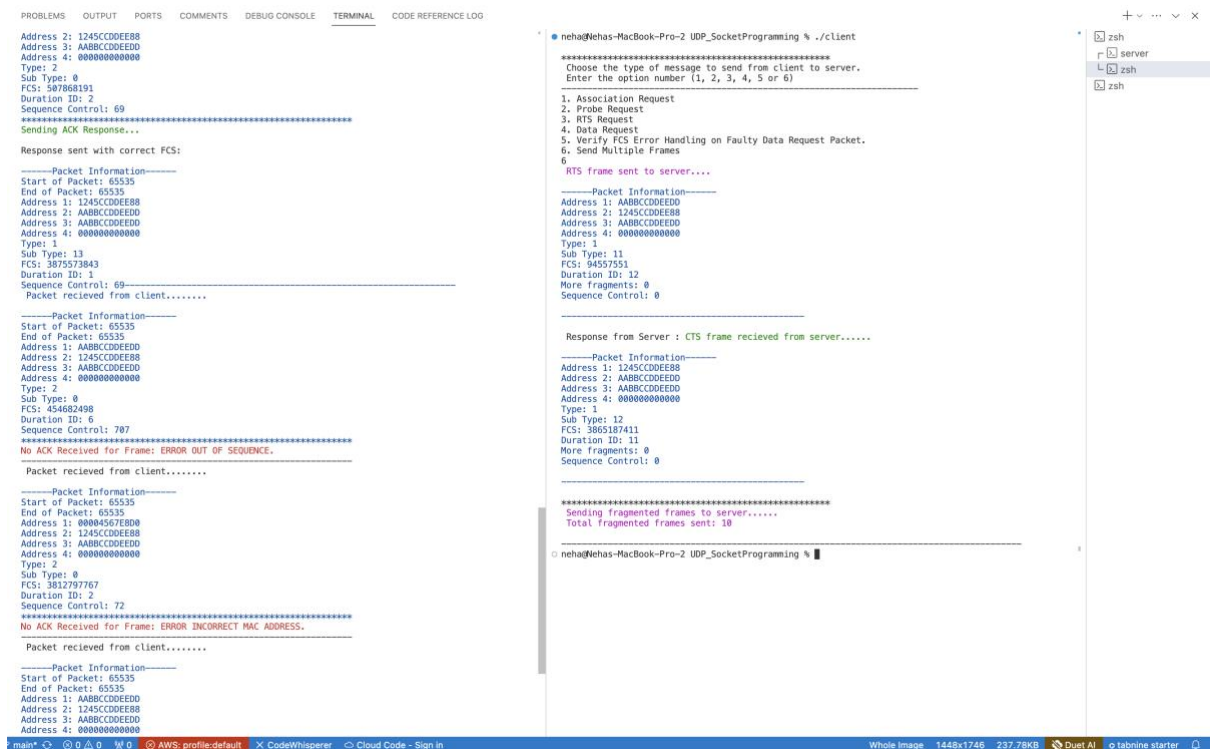
Address 1: 1245CCDDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 000000000000
Type: 1
Sub Type: 12
FCS: 3865187411
Duration ID: 11
More Fragments: 0
Sequence Control: 0

Sending fragmented frames to server.....
Total Fragmented Frames sent: 10

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

main 0 0 0 0 AWS: profile:default X CodeWhisperer Cloud Code - Sign in

Whole image 1448x1746 237.78KB Duet AI tabnine starter



4 error fragmented frames

PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE **TERMINAL** CODE REFERENCE LOG

```
-----Packet Information-----
Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDEE88
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 2
Sub Type: 0
FCS: 2871177440
Duration ID: 6
Sequence Control: 707
*****
No ACK Received for Frame: ERROR OUT OF SEQUENCE.
-----
Packet recieved from client.....

-----Packet Information-----
Start of Packet: 65535
End of Packet: 65535
Address 1: 00004567800
Address 2: 1245CCDEE88
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 2
Sub Type: 0
FCS: 3812797767
Duration ID: 2
Sequence Control: 72
*****
No ACK Received for Frame: ERROR INCORRECT MAC ADDRESS.
-----
Packet recieved from client.....

-----Packet Information-----
Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDEE88
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 2
Sub Type: 0
FCS: 1478994553
Duration ID: 4
Sequence Control: 707
*****
No ACK Received for Frame: ERROR DUPLICATE FRAME.
-----
Packet recieved from client.....

-----Packet Information-----
Start of Packet: 65535
End of Packet: 65535
Address 1: AABBCDDEEDD
Address 2: 1245CCDEE88
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 2
Sub Type: 0
FCS: 1002697968
Duration ID: 2
Sequence Control: 74
*****
No ACK Received for Frame: ERROR END OF PACKET MISSING.
-----

```

After ack_timer and retry_counter runs out, error message is displayed:

PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE **TERMINAL** CODE REFERENCE LOG

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client

```
*****
Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)
```

1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames

RTS frame sent to server....

```
-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDEE88
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 1
Sub Type: 11
FCS: 2770572510
Duration ID: 12
More Fragments: 0
Sequence Control: 0
-----
```

Response from Server : CTS frame recieved from server.....

```
-----Packet Information-----
Address 1: 1245CCDEE88
Address 2: AABBCDDEEDD
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 1
Sub Type: 12
FCS: 3865187411
Duration ID: 11
More Fragments: 0
Sequence Control: 0
-----
```

```
*****
Sending fragmented frames to server.....
Total fragmented frames sent: 10
-----
```

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames

Sending Data Packet to Server.....

```
-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDEE88
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 2
Sub Type: 0
FCS: 3311318129
Duration ID: 2
More Fragments: 0
Sequence Control: 0
-----
```

Response from Server : ERROR Server does not respond

Sending Packet Again.....
Sending Data Packet to Server.....

```
-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDEE88
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 2
Sub Type: 0
FCS: 3311318129
Duration ID: 2
More Fragments: 0
Sequence Control: 0
-----
```

Response from Server : ERROR Server does not respond

Sending Packet Again.....
Sending Data Packet to Server.....

```
-----Packet Information-----
Address 1: AABBCDDEEDD
Address 2: 1245CCDEE88
Address 3: AABBCDDEEDD
Address 4: 00000000000
Type: 2
Sub Type: 0
FCS: 3311318129
Duration ID: 2
More Fragments: 0
Sequence Control: 0
-----
```

Response from Server : ERROR Server does not respond

Sending Packet Again.....

ERROR : No ACK received from AP

neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming %

If user enters a wrong option, the client throws an error and exits.

```
PROBLEMS OUTPUT PORTS COMMENTS DEBUG CONSOLE TERMINAL CODE REFERENCE LOG
○ neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./server
Server started successfully.....
█

○ neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % ./client
*****
Choose the type of message to send from client to server.
Enter the option number (1, 2, 3, 4, 5 or 6)
-----
1. Association Request
2. Probe Request
3. RTS Request
4. Data Request
5. Verify FCS Error Handling on Faulty Data Request Packet.
6. Send Multiple Frames
8

ERROR Retry again with correct option
○ neha@Nehas-MacBook-Pro-2 UDP_SocketProgramming % █
```