CS39006: NETWORKS LABORATORY

ASSIGNMENT – 2 REPORT

UDP Sockets

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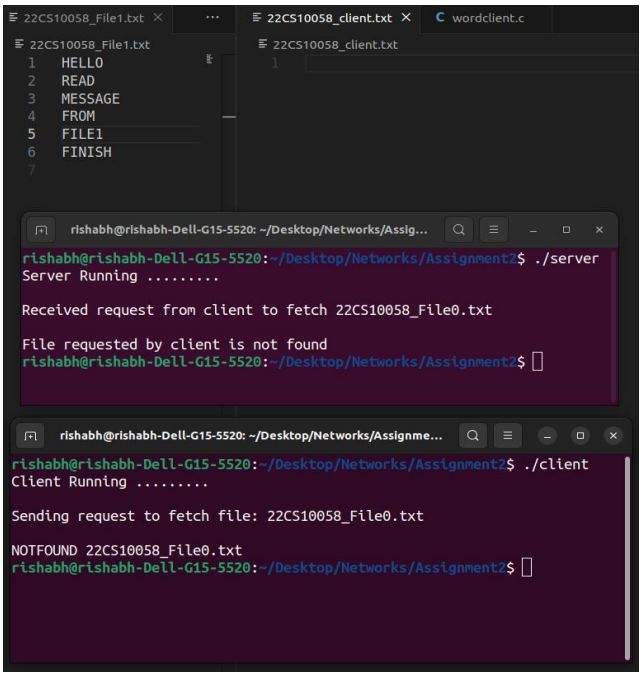
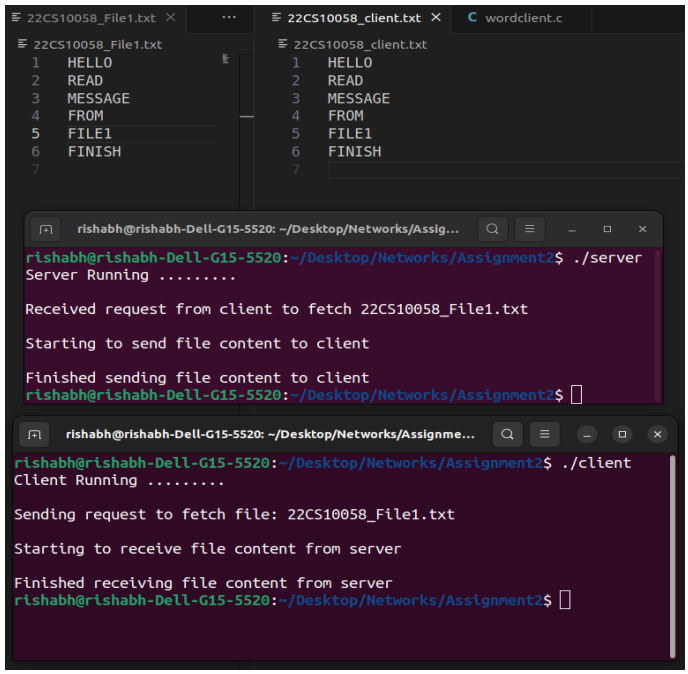
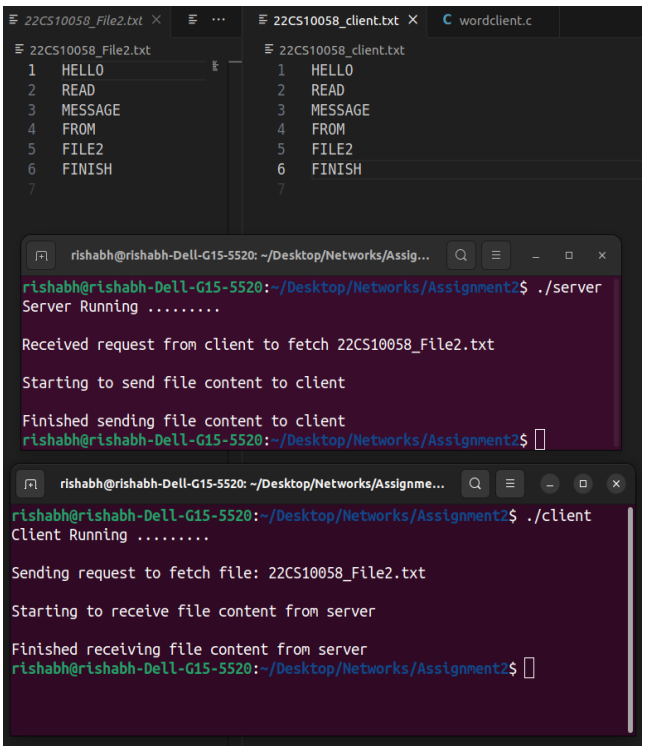
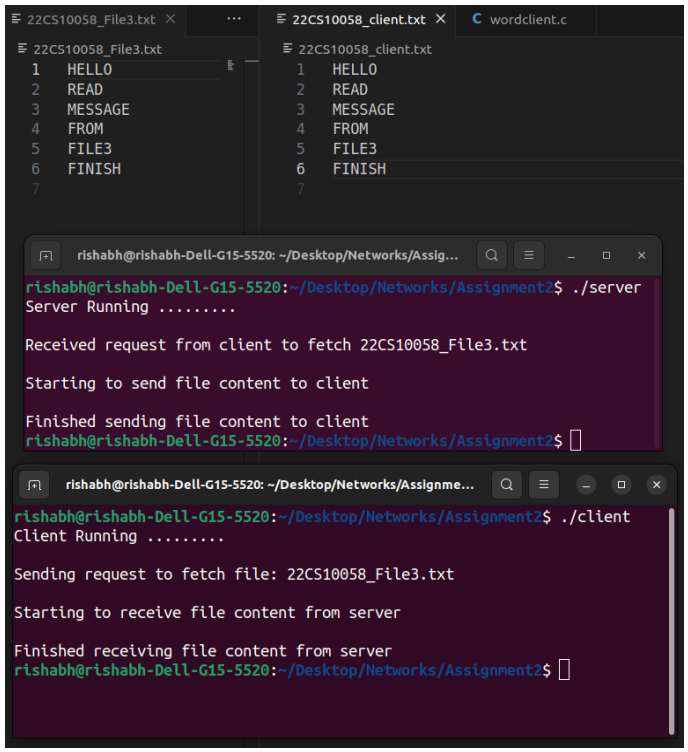
PART A: SOCKET PROGRAMMING

OUTPUT:





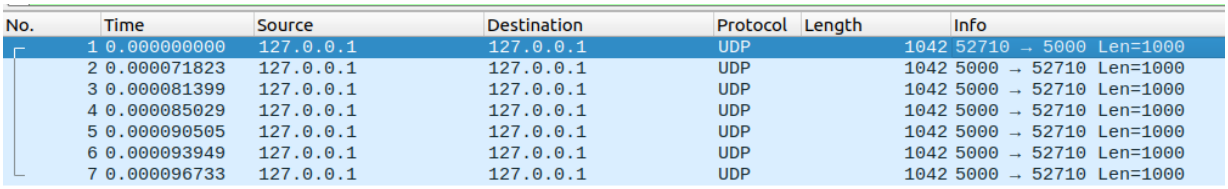




PART B: WIRESHARK ANALYSIS

[Note: This part of the assignment was done using the File2. Content of file – "Hello Read Message from File2 Finish"]

1) Capture all packets exchanged between the client and server during execution. Show the screenshots.



No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	127.0.0.1	127.0.0.1	UDP	1042	52710 → 5000 Len=1000
2	0.000071823	127.0.0.1	127.0.0.1	UDP	1042	5000 → 52710 Len=1000
3	0.000081399	127.0.0.1	127.0.0.1	UDP	1042	5000 → 52710 Len=1000
4	0.000085029	127.0.0.1	127.0.0.1	UDP	1042	5000 → 52710 Len=1000
5	0.000090505	127.0.0.1	127.0.0.1	UDP	1042	5000 → 52710 Len=1000
6	0.000093949	127.0.0.1	127.0.0.1	UDP	1042	5000 → 52710 Len=1000
7	0.000096733	127.0.0.1	127.0.0.1	UDP	1042	5000 → 52710 Len=1000

2) What protocol is used for communication - ***UDP***
3) What are the source and destination IP addresses and ports?

File name (Client to Server):

Source – 127.0.0.1#52710

Destination – 127.0.0.1#5000

File content (Server to Client):

Source – 127.0.0.1#5000

Destination – 127.0.0.1#52710

4) What is the size (in bytes) of the FILENAME request sent by the client?

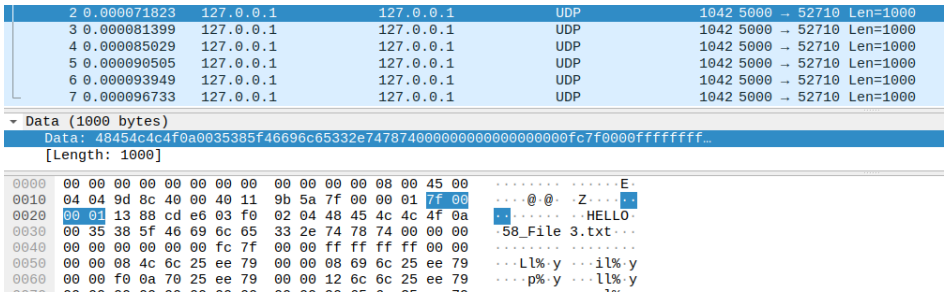
Size of the request – ***1042 bytes***

5) What is the size of the server's response for HELLO and the first word (WORD1)?

Size of the response of each message - ***1042 bytes***

6) Inspect the payload of packets where the words are transmitted. Show the UDP payloads of those packets.

a) HELLO Message –



```
    2 0.000071823   127.0.0.1   127.0.0.1   UDP   1042 5000 → 52710 Len=1000
    3 0.000081399   127.0.0.1   127.0.0.1   UDP   1042 5000 → 52710 Len=1000
    4 0.000085029   127.0.0.1   127.0.0.1   UDP   1042 5000 → 52710 Len=1000
    5 0.000090505   127.0.0.1   127.0.0.1   UDP   1042 5000 → 52710 Len=1000
    6 0.000093949   127.0.0.1   127.0.0.1   UDP   1042 5000 → 52710 Len=1000
    7 0.000096733   127.0.0.1   127.0.0.1   UDP   1042 5000 → 52710 Len=1000

▾ Data (1000 bytes)
    Data: 48454c4c4f0a0035385f46696c65332e747874000000000000000000fc7f0000ffffffff…
    [Length: 1000]

0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ........ ......E·
0010  04 04 9d 8c 40 00 40 11  9b 5a 7f 00 00 01 7f 00   ····@·@· ·Z······
0020  00 01 13 88 cd e6 03 f0  02 04 48 45 4c 4c 4f 0a   ········ ··HELLO·
0030  00 35 38 5f 46 69 6c 65  33 2e 74 78 74 00 00 00   ·58_File 3.txt···
0040  00 00 00 00 00 00 fc 7f  00 00 ff ff ff ff 00 00   ........ ........
0050  00 00 08 4c 6c 25 ee 79  00 00 08 69 6c 25 ee 79   ···Ll%·y ···il%·y
0060  00 00 f0 0a 70 25 ee 79  00 00 12 6c 6c 25 ee 79   ····p%·y ···ll%·y
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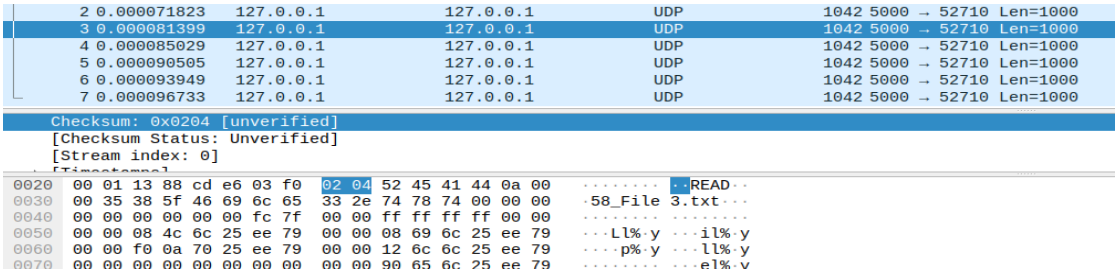
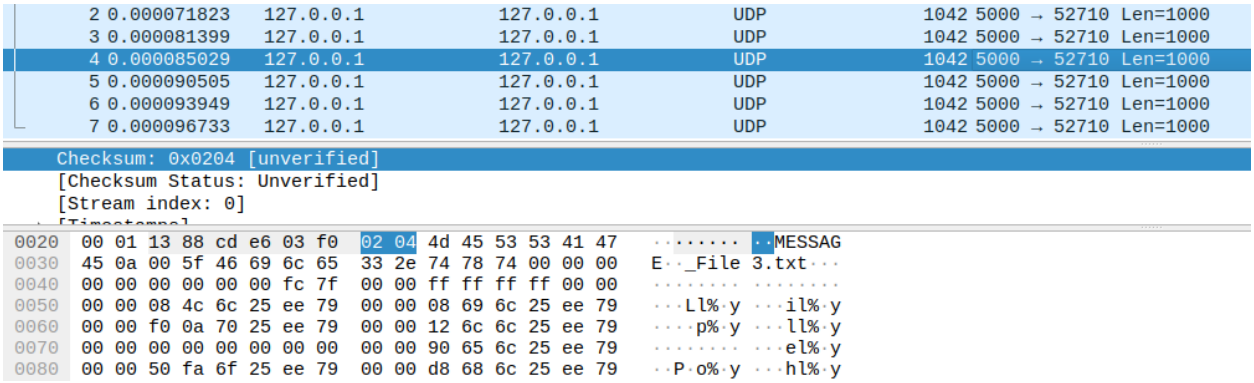
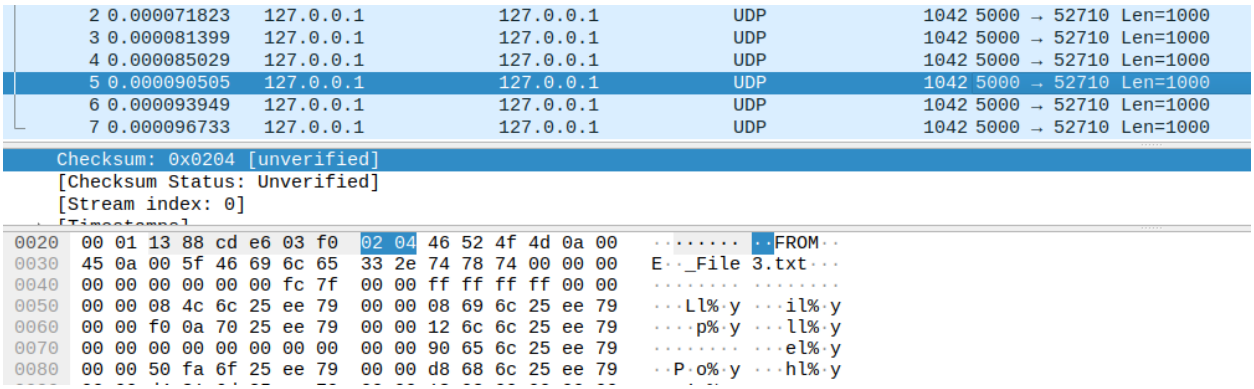
b) WORD1 Message –



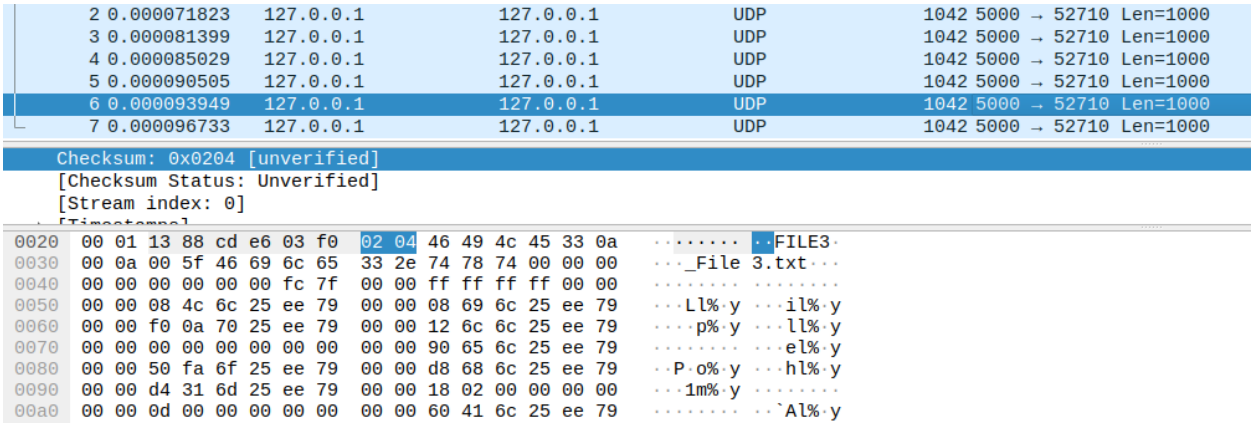
c) WORD2 Message –



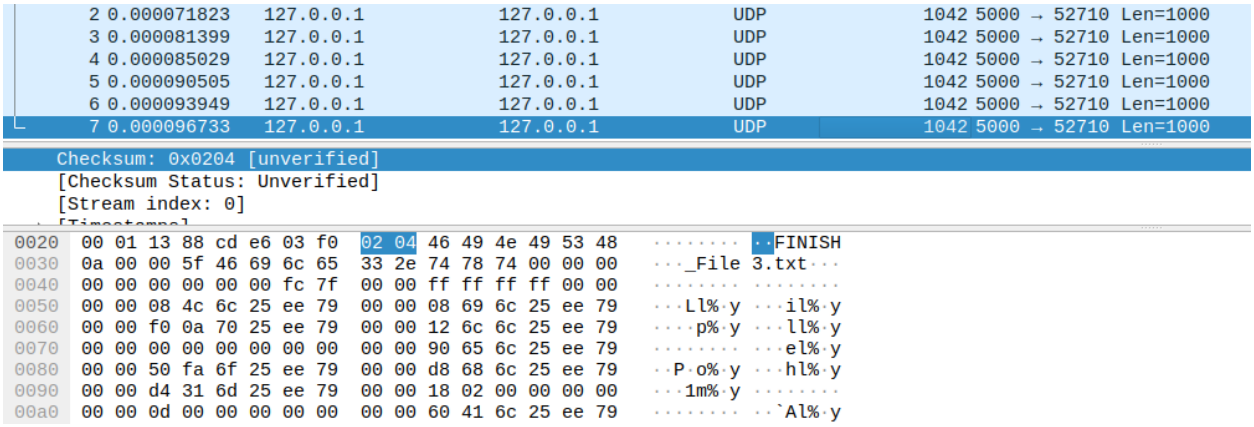
d) WORD3 Message –



e) WORD4 Message –



f) FINISH Message –



7) Measure the total time taken for the file transfer from start to finish.

The time taken for the total file transfer can be seen in the picture of captured packets. The first packet from the client to the server containing the file name was sent at t = 0, and the final message 'FINISH' from the server to the client was sent at t = 0.096733 ms. Hence,

Total time taken = ***0.096733 ms***

8) What is the average size of each packet during the communication?

The size of data being sent by the server to the client or vice-versa is 1000 bytes every time. Additionally, the network adds 42 bytes of data to the packet to facilitate the transfer. Hence, a total of 1042 bytes is transferred through each packet. Therefore,

Average size of each packet = ***1042 bytes***