Assignment 2
UDP Sockets

PART 1: Socket Programming

Screenshots of the communication messages between the client and the server:

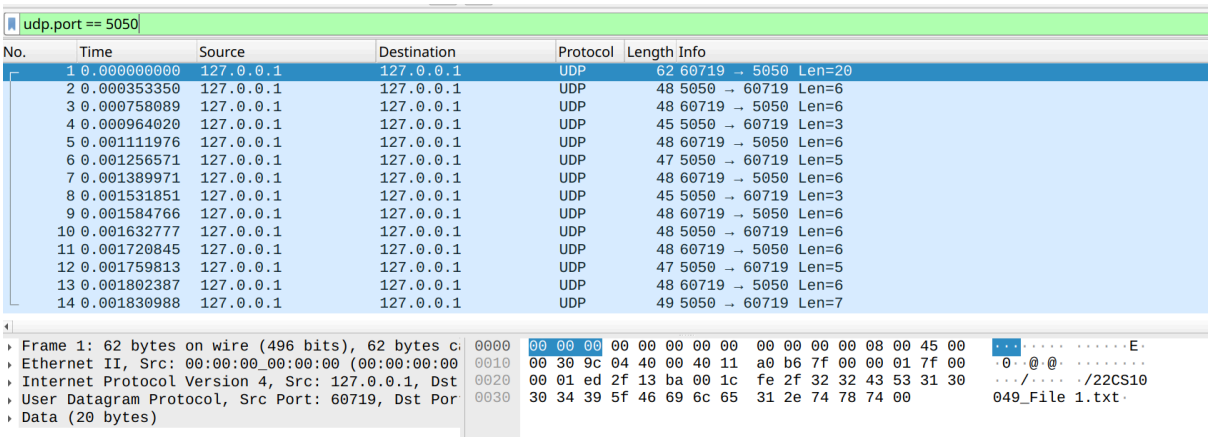
```
nived@nived-Inspiron-14-5420:~/KGP/Sem6/Networks Lab/Lab2$ ./wc
Enter the file name to fetch from the server: 22CS10049_File1.txt

Message Received: HELLO
Translates to: Request acknowledged, proceeding to retrieve file contents...

Word 1 received from server: My
Word 2 received from server: Name
Word 3 received from server: is
Word 4 received from server: Nived
Word 5 received from server: Shah

FINISH received, completing file content retrieval
```

```
nived@nived-Inspiron-14-5420:~/KGP/Sem6/Networks Lab/Lab2$ ./ws

Server Running .........

Sending contents of file: 22CS10049_File1.txt

Word 1 sent: HELLO
Word 2 sent: My
Word 3 sent: Name
Word 4 sent: is
Word 5 sent: Nived
Word 6 sent: Shah
Word 7 sent: FINISH

File contents sent to client
```

```
nived@nived-Inspiron-14-5420:~/KGP/Sem6/Networks Lab/Lab2$ ./wc
Enter the file name to fetch from the server: wredfa

Message Received: NOTFOUND wredfa
Translates to: FILE NOT FOUND
```

PART 2: Wireshark Analysis

1. A capture of all packets exchanged between client and server during execution.

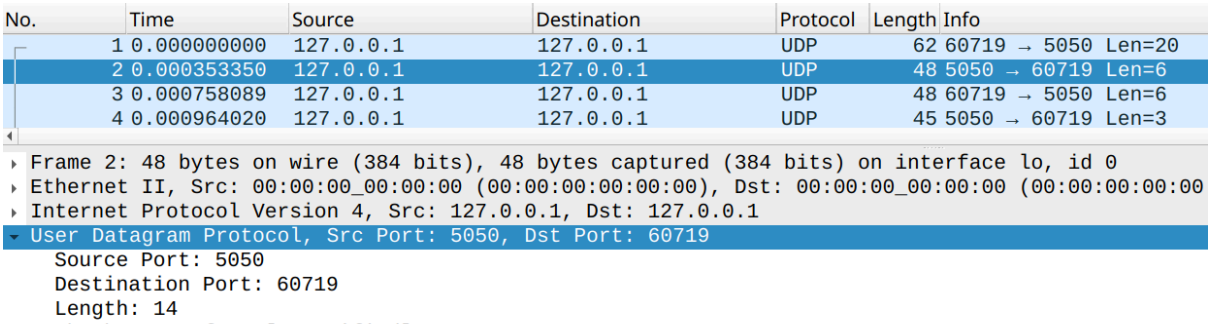


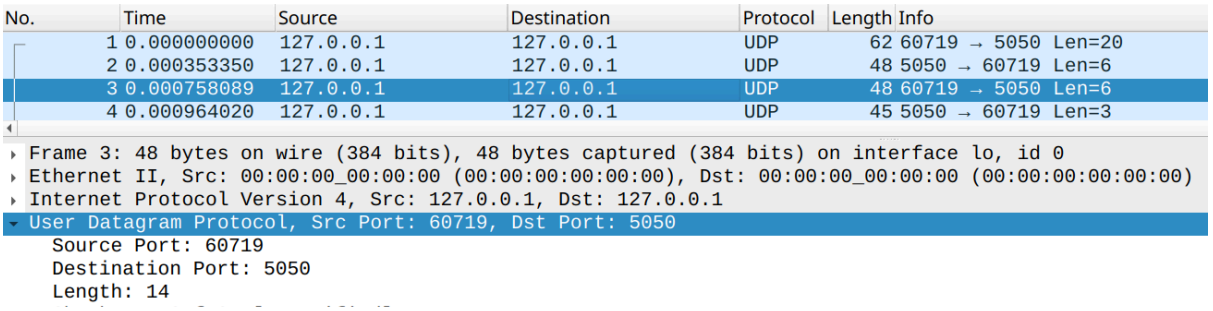
2. Protocol Used for communication

The protocol used for communication is **User Datagram Protocol (UDP)**. This was defined by the **SOCK_DGRAM** parameter in the socket function used in the codes of client and server.

3. Source and Destination IP addresses and Ports

	IP Address	**Port**
Source (client)	127.0.0.1	60719
Destination (server)	127.0.0.1	5050

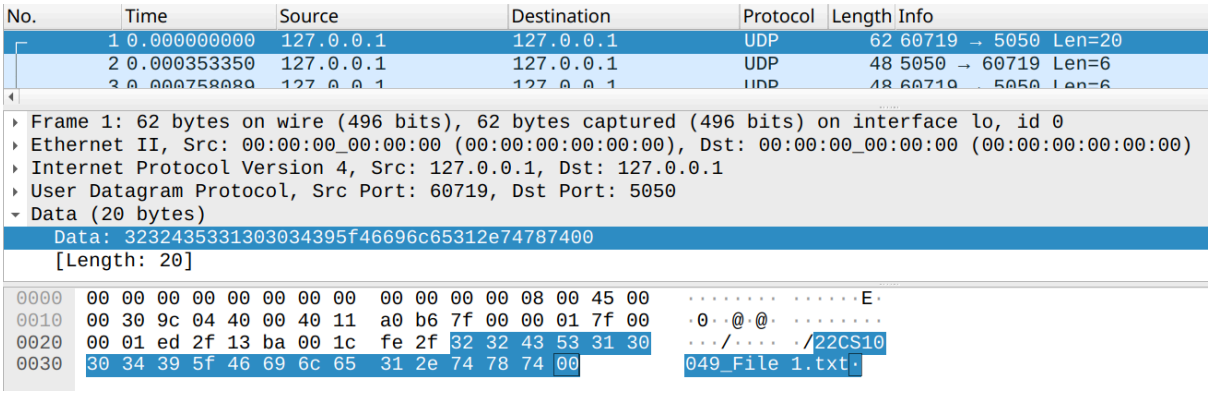




4. Size in bytes of the FILENAME request

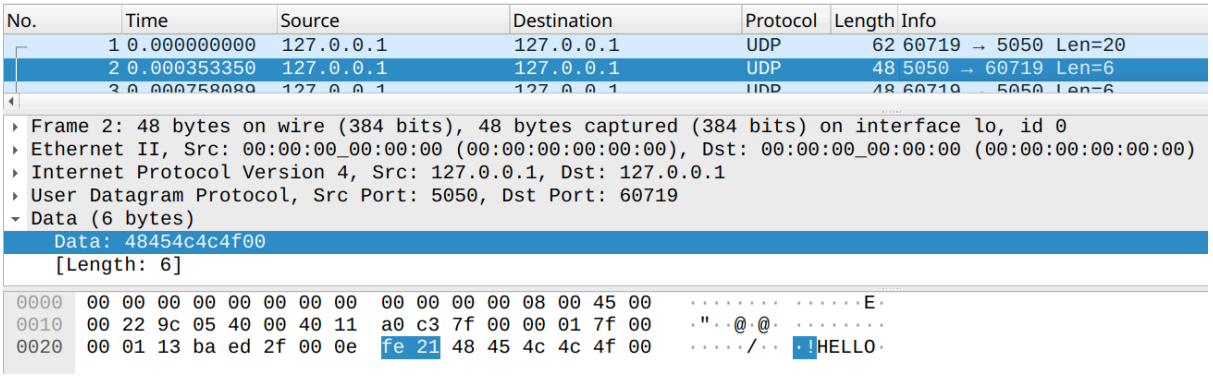
Packet Size: **62 bytes**

Data Length: **20 bytes**

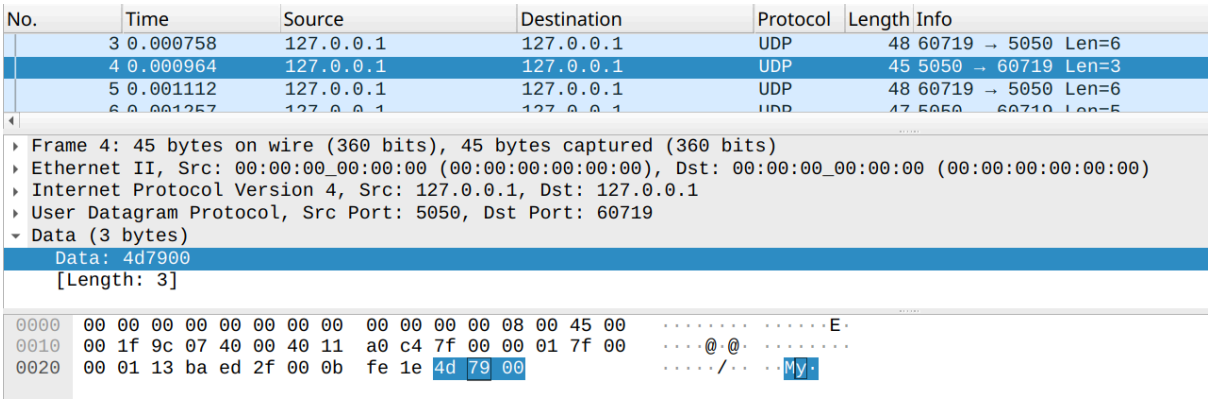


5. Size of server's response for HELLO and Word1

Size of packet (HELLO): **48 bytes** (including headers)

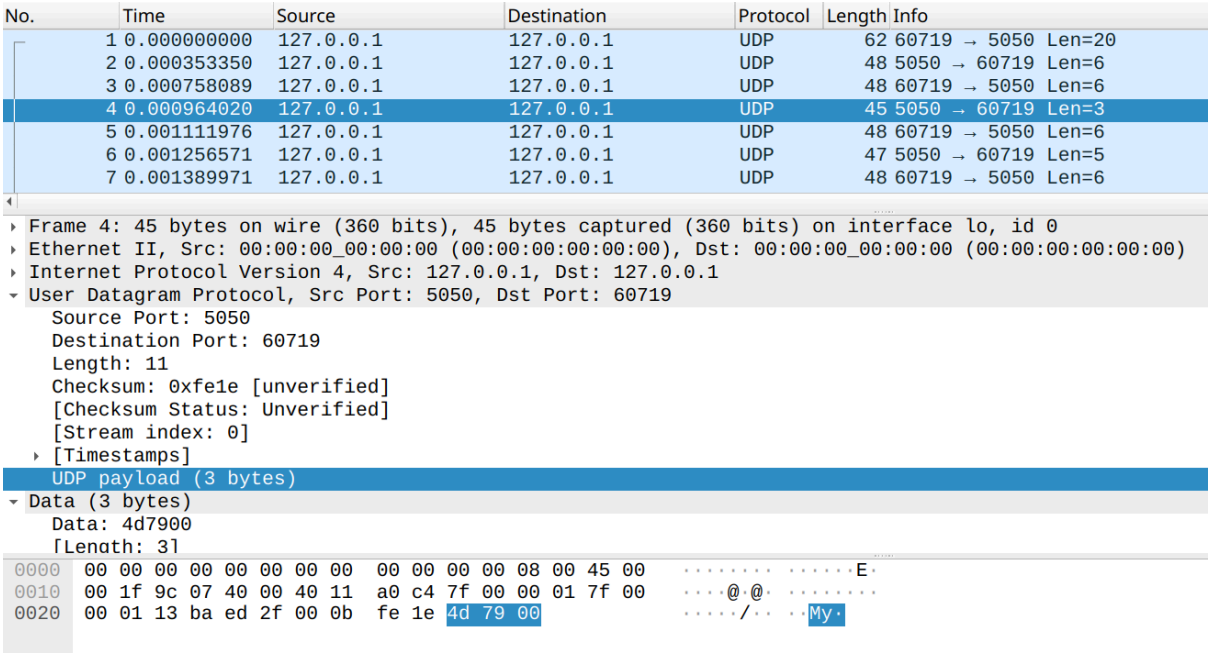


Size of packet for Word1 ("My"): **45 bytes** (including headers)



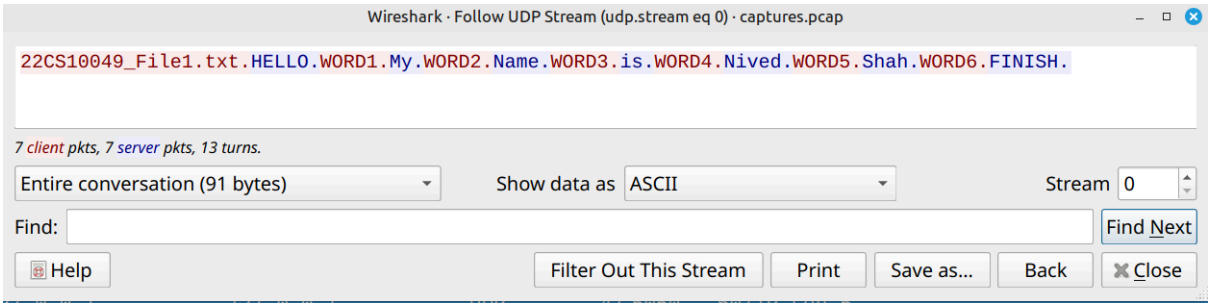
6. Packet Payload inspection, displaying UDP payloads of those packets

Packet Payload signifies the actual data that is sent or received by the client and server (the headers are stripped off).



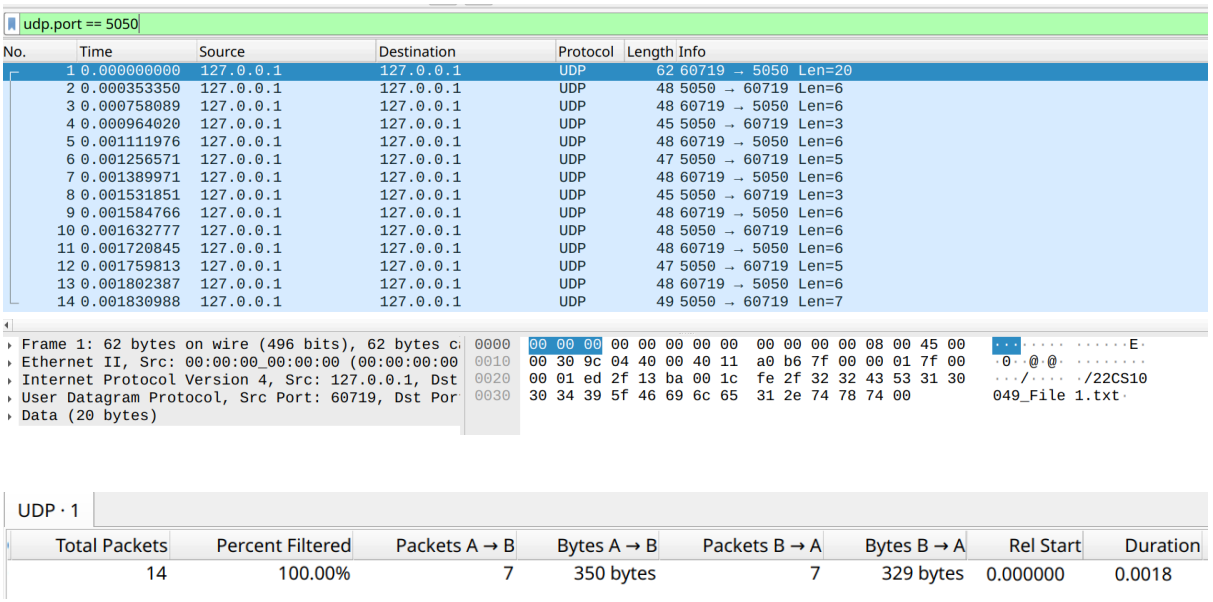
The following screenshot shows the UDP stream during the capture duration.

Red - messages sent by client
Blue - messages sent by server.

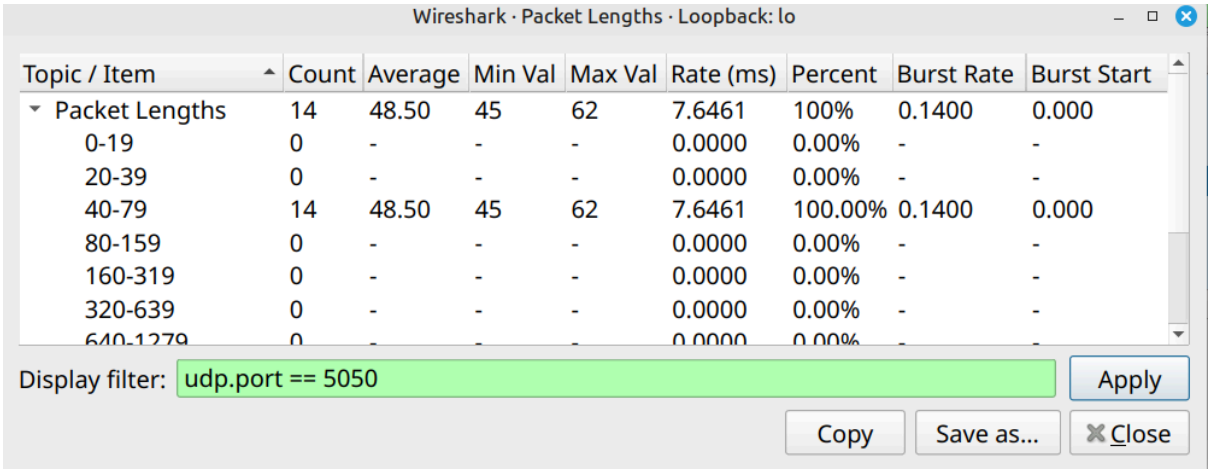


7. Total time for file transfer from start to finish

The transfer time over the network is **0.001830988 seconds** (this is the time when “FINISH” arrives at the client).



8. Packet length analysis:



Average size of of each packet during communication: **48.50 bytes**