Assignment 2
UDP Sockets

Ans 1)


```
udp.port == 5000

No.        Time          Source          Destination       Protocol  Length  Info
        1 0.000000      127.0.0.1       127.0.0.1         UDP          61  45798 → 5000 Len=19
        2 0.000196      127.0.0.1       127.0.0.1         UDP          49  5000 → 45798 Len=7
        3 0.000223      127.0.0.1       127.0.0.1         UDP          51  5000 → 45798 Len=9
        4 0.000430      127.0.0.1       127.0.0.1         UDP          47  45798 → 5000 Len=5
        5 0.000454      127.0.0.1       127.0.0.1         UDP          47  45798 → 5000 Len=5
        6 0.000560      127.0.0.1       127.0.0.1         UDP          51  5000 → 45798 Len=9
        7 0.000599      127.0.0.1       127.0.0.1         UDP          51  5000 → 45798 Len=9
        8 0.000619      127.0.0.1       127.0.0.1         UDP          47  45798 → 5000 Len=5
        9 0.000641      127.0.0.1       127.0.0.1         UDP          47  45798 → 5000 Len=5
       10 0.000704      127.0.0.1       127.0.0.1         UDP          50  5000 → 45798 Len=8
```

```
shivam@shivam-linux:~/6thSem/CN/Lab 2$ gcc wordserver.c
shivam@shivam-linux:~/6thSem/CN/Lab 2$ ./a.out
Server is listening on port 5000...
Received file request: 22CS10072_File1.txt
Sent: HELLO
Sent: CS39006
Sent: CS31206
Sent: CS31208
Sent: FINISH
File transfer completed.
```

```
shivam@shivam-linux:~/6thSem/CN/Lab 2$ gcc wordclient.c
shivam@shivam-linux:~/6thSem/CN/Lab 2$ ./a.out
File received successfully.
```

Ans 2) UDP (as given in the Wireshark packet capture)

Ans 3)

SOURCE IP = 127.0.0.1, PORT = 45798

DESTINATION IP = 127.0.0.1, PORT = 5000

Ans 4) 19 bytes

```
▶ Frame 1: 61 bytes on wire (488 bits), 61 bytes captured (488 bits)
▶ Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00 (00:00:00:00:00:00)
▶ Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
▶ User Datagram Protocol, Src Port: 45798, Dst Port: 5000
▶ Data (19 bytes)

0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ·········· · ····E·
0010  00 2f 0a 91 40 00 40 11  32 2b 7f 00 00 01 7f 00   ·/··@·@· 2+······
0020  00 01 b2 e6 13 88 00 1b  fe 2e 32 32 43 53 31 30   ········ ·.22CS10
0030  30 37 32 5f 46 69 6c 65  31 2e 74 78 74            072_File 1.txt
```

Ans 5)

For Hello, Size = 7 bytes

```
Wireshark · Packet 2 · Shivam_Choudhury_22CS10072.pcap

▶ Frame 2: 49 bytes on wire (392 bits), 49 bytes captured (392 bits)
▶ Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00 (00:00:00:00:00:00)
▶ Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
▶ User Datagram Protocol, Src Port: 5000, Dst Port: 45798
▶ Data (7 bytes)


0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ··········· ······E·
0010  00 23 0a 92 40 00 40 11  32 36 7f 00 00 01 7f 00   ·#··@·@· 26······
0020  00 01 13 88 b2 e6 00 0f  fe 22 48 45 4c 4c 4f 0d   ········ ·"HELLO·
0030  0a                                                 ·
```

For first word (WORD 1), size = 9 bytes

```
▶ Frame 3: 51 bytes on wire (408 bits), 51 bytes captured (408 bits)
▶ Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00 (00:00:00:00:00:00)
▶ Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
▶ User Datagram Protocol, Src Port: 5000, Dst Port: 45798
▶ Data (9 bytes)


0000  00 00 00 00 00 00 00 00  00 00 00 00 08 00 45 00   ··········· ······E·
0010  00 25 0a 93 40 00 40 11  32 33 7f 00 00 01 7f 00   ·%··@·@· 23······
0020  00 01 13 88 b2 e6 00 11  fe 24 43 53 33 39 30 30   ········ ·$CS3900
0030  36 0d 0a                                           6··
```

Ans 6)

Packet 1

```
  [Stream Packet Number: 1]
▶ [Timestamps]
  UDP payload (19 bytes)
```

Packet 2

```
  [Stream Packet Number: 2]
  [Timestamps]
  UDP payload (7 bytes)
```

Packet 3

```
  [Stream Packet Number: 3]
▸ [Timestamps]
  UDP payload (9 bytes)
```

Packet 4

```
[Stream Packet Number: 4]
[Timestamps]
UDP payload (5 bytes)
```

Packet 5

```
 [Stream Packet Number: 5]
 [Timestamps]
 UDP payload (5 bytes)
```

Packet 6

```
[Stream Packet Number: 6]
[Timestamps]
UDP payload (9 bytes)
```

Packet 7

```
[Stream Packet Number: 7]
[Timestamps]
UDP payload (9 bytes)
```

Packet 8

```
[Stream Packet Number: 8]
[Timestamps]
UDP payload (5 bytes)
```

Packet 9

```
[Stream Packet Number: 9]
[Timestamps]
UDP payload (5 bytes)
```

Packet 10

```
[Stream Packet Number: 10]
[Timestamps]
UDP payload (8 bytes)
```

Ans 7) Total Time = 0.000704 seconds

```
   10 0.000704      127.0.0.1          127.0.0.1          UDP       50 5000 → 45798 Len=8
```

Ans 8)

Average Size = (19 + 7 + 9 + 5 + 5 + 9 + 9 + 5 + 5 + 8) / 10 = 8.1 bytes