Lab - 4
File transfer using TCP and UDP
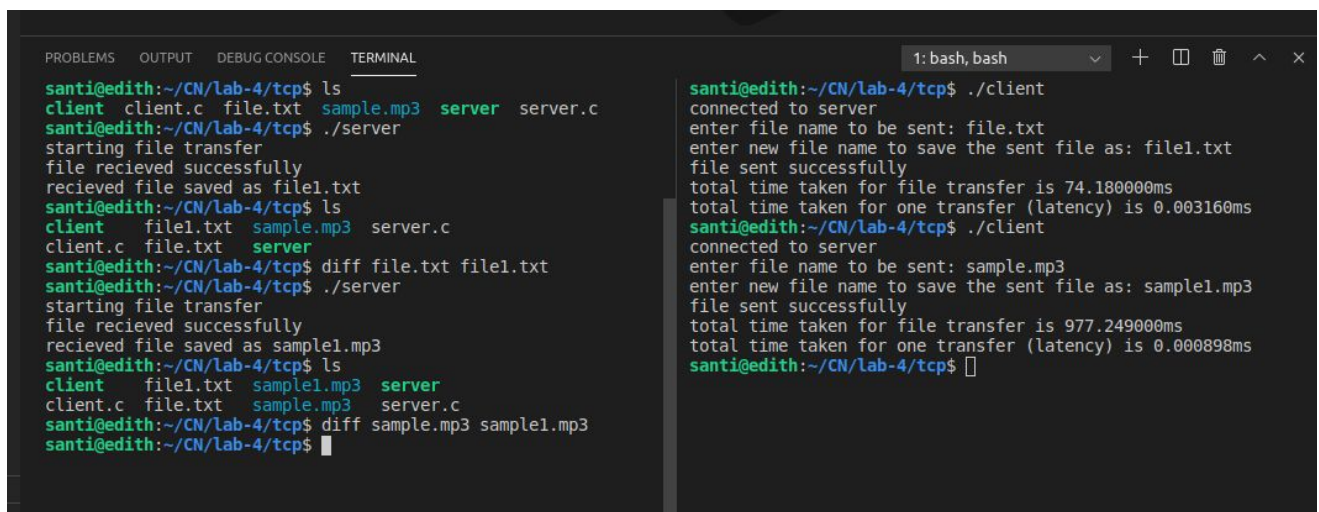
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Program Description

The server has to be run before the client. When the client is run, it asks for the name of the file to be sent to the server. After that, it asks for the name to save the sent file as in the server. The said file is sent to the server and saved in the specified filename. This program **can transfer any kind of file - text, audio, image, video, etc**

Output Screenshots

Here, I have used the diff command to show that the original file and the received file don't differ. No output from diff command means the files are the same.

<div align="center"><strong style="color:orange">TCP</div>

UDP


```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL                                    1: bash, bash

santi@edith:~/CN/lab-4/udp$ ls                          santi@edith:~/CN/lab-4/udp$ ./client
client  client.c  file.txt  sample.mp3  server  server.c  enter file name to be sent: file.txt
santi@edith:~/CN/lab-4/udp$ ./server                    enter new file name to save the sent file as: file1.txt
starting file transfer                                  file sent successfully
file recieved successfully                              total time taken for file transfer is 577.217000ms
recieved file saved as file1.txt                        total time taken for one transfer (latency) is 0.024588ms
santi@edith:~/CN/lab-4/udp$ ls                          santi@edith:~/CN/lab-4/udp$ ./client
client    file1.txt  sample.mp3  server.c               enter file name to be sent: sample.mp3
client.c  file.txt    server                            enter new file name to save the sent file as: sample1.mp3
santi@edith:~/CN/lab-4/udp$ diff file.txt file1.txt     file sent successfully
santi@edith:~/CN/lab-4/udp$ ./server                    total time taken for file transfer is 25961.327000ms
starting file transfer                                  total time taken for one transfer (latency) is 0.023865ms
file recieved successfully                              santi@edith:~/CN/lab-4/udp$
recieved file saved as sample1.mp3
santi@edith:~/CN/lab-4/udp$ ls
client    file1.txt  sample1.mp3  server
client.c  file.txt   sample.mp3   server.c
santi@edith:~/CN/lab-4/udp$ diff sample.mp3 sample1.mp3
santi@edith:~/CN/lab-4/udp$
```

Data Transmission Latency


```
santi@edith:~/CN$ ping -c 5 localhost
PING localhost (127.0.0.1) 56(84) bytes of data.
64 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.074 ms
64 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.092 ms
64 bytes from localhost (127.0.0.1): icmp_seq=3 ttl=64 time=0.080 ms
64 bytes from localhost (127.0.0.1): icmp_seq=4 ttl=64 time=0.073 ms
64 bytes from localhost (127.0.0.1): icmp_seq=5 ttl=64 time=0.070 ms

--- localhost ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4092ms
rtt min/avg/max/mdev = 0.070/0.077/0.092/0.007 ms
santi@edith:~/CN$ traceroute localhost
traceroute to localhost (127.0.0.1), 30 hops max, 60 byte packets
 1  localhost (127.0.0.1)  0.076 ms  0.029 ms  0.026 ms
santi@edith:~/CN$
```

TCP

```
santi@edith:~/CN$ nmap -p 9009 localhost
Starting Nmap 7.80 ( https://nmap.org ) at 2020-09-01 18:23 IST
Nmap scan report for localhost (127.0.0.1)
Host is up (0.000051s latency).

PORT     STATE SERVICE
9009/tcp open  pichat

Nmap done: 1 IP address (1 host up) scanned in 0.04 seconds
```

UDP

```
santi@edith:~/CN$ sudo nmap -sU -p 9009 localhost
Starting Nmap 7.80 ( https://nmap.org ) at 2020-09-01 18:23 IST
Nmap scan report for localhost (127.0.0.1)
Host is up (0.000037s latency).

PORT     STATE  SERVICE
9009/udp closed pichat

Nmap done: 1 IP address (1 host up) scanned in 0.12 seconds
```