

# PRACTICE - 6

**Sending a BITMAP image file from Client to Server in a binary-encoded form in both TCP/UDP. Also, analyze the performance in terms of Latency between the binary encoded text file and BITMAP image file.**

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# UDP

## Output

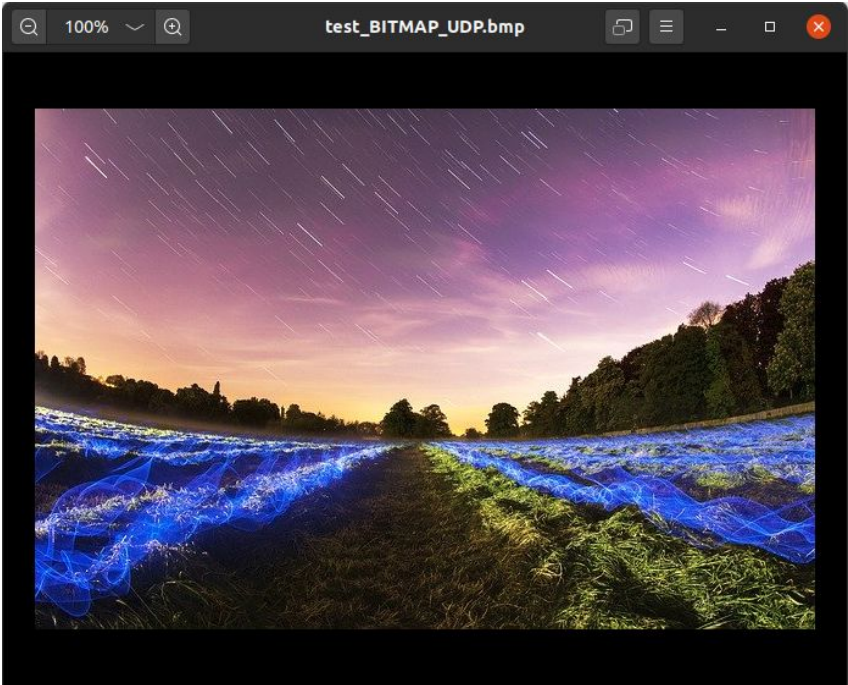
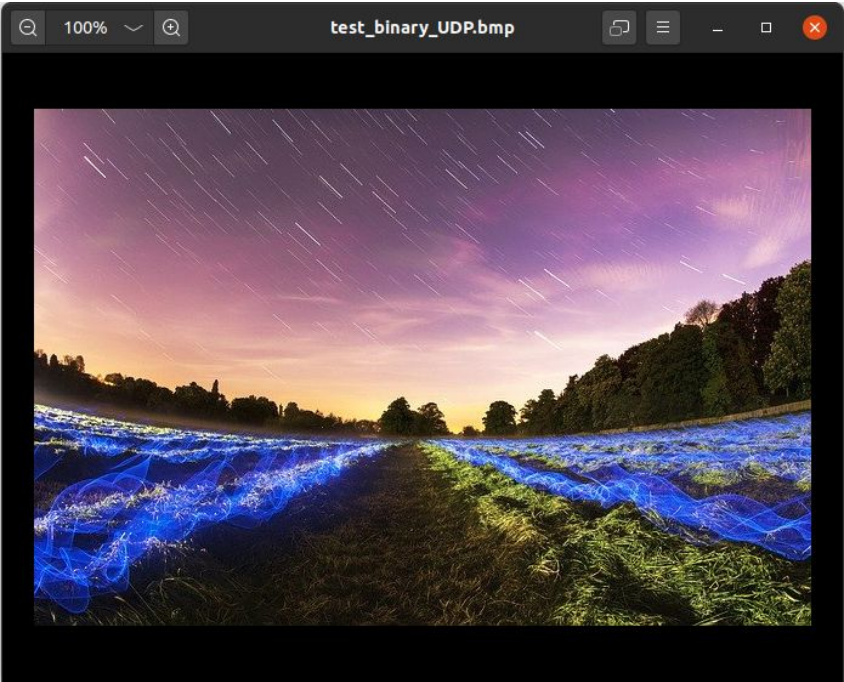
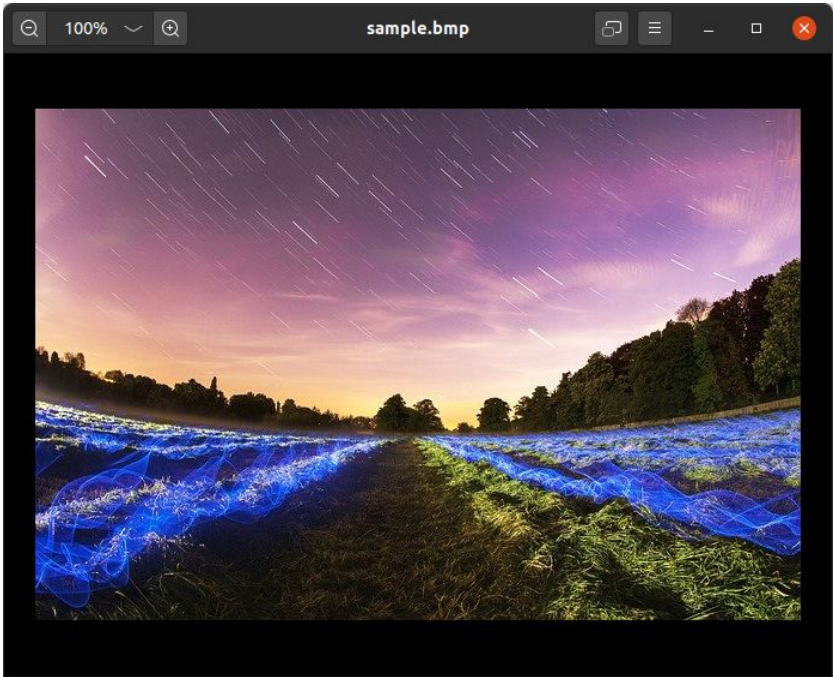
```
viknesh@viknesh-HP-EliteBook-840-G3: ~/Documents/CN/Lab_6/UDP
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ gcc UDPserver.c -o server
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ ./server
Receiving File in Binary encoded format...
File transfer has been initiated...
File has been Received...
File saved as : test_binary_UDP.bmp
Receiving File in BITMAP format...
File transfer has been initiated...
File has been Received...
File saved as : test_BITMAP_UDP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ diff sample.bmp test_binary_UDP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ diff sample.bmp test_BITMAP_UDP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ ls
client sample.bmp server test_binary_UDP.bmp test_BITMAP_UDP.bmp UDPclient.c UDPserver.c
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$

viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ gcc UDPclient.c -o client
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ ./client
Enter the file name to be transfered with the extension : sample.bmp
Enter the file name you want the file to be saved with the extension : test.bmp
Sending File in Binary encoded format...
File transfer has been initiated...
File sent successfully...
Sending File in BITMAP format...
File transfer has been initiated...
File sent successfully...
Average Latency in Binary encoded format : 24623.766000 ms
Average Latency BITMAP format: 25257.814000 ms
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$
```

```
viknesh@viknesh-HP-EliteBook-840-G3: ~/Documents/CN/Lab_6/UDP
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ gcc UDPserver.c -o server
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ ./server
Receiving File in Binary encoded format...
File transfer has been initiated...
File has been Received...
File saved as : test_binary_UDP.bmp
Receiving File in BITMAP format...
File transfer has been initiated...
File has been Received...
File saved as : test_BITMAP_UDP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ diff sample.bmp test_binary_UDP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ diff sample.bmp test_BITMAP_UDP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ ls
client sample.bmp server test_binary_UDP.bmp test_BITMAP_UDP.bmp UDPclient.c UDPserver.c
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$
```

```
viknesh@viknesh-HP-EliteBook-840-G3: ~/Documents/CN/Lab_6/UDP
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ gcc UDPclient.c -o client
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$ ./client
Enter the file name to be transfered with the extension : sample.bmp
Enter the file name you want the file to be saved with the extension : test.bmp
Sending File in Binary encoded format...
File transfer has been initiated...
File sent successfully...
Sending File in BITMAP format...
File transfer has been initiated...
File sent successfully...
Average Latency in Binary encoded format : 24623.766000 ms
Average Latency BITMAP format: 25257.814000 ms
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/UDP$
```

# Images





# TCP

## Output

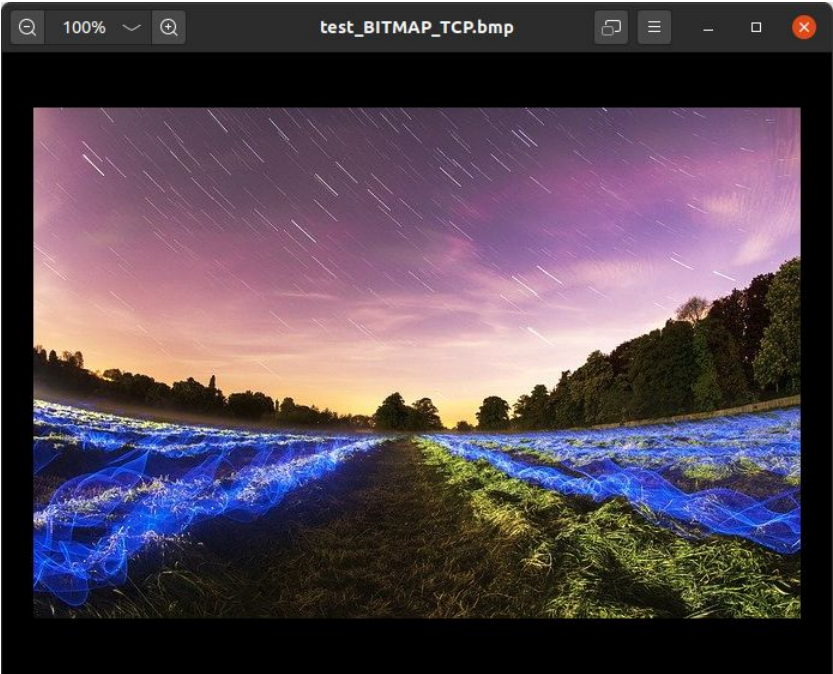
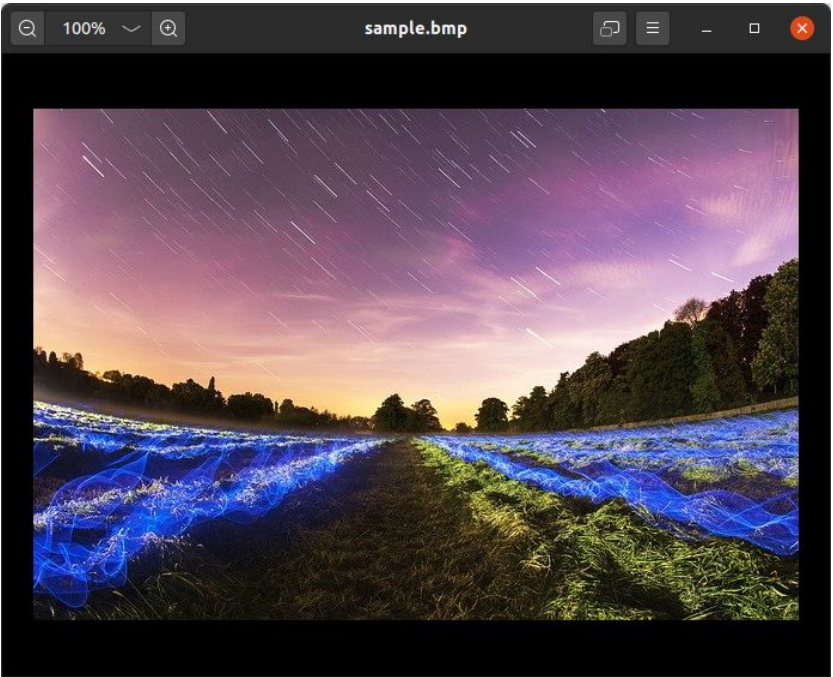
```
viknesh@viknesh-HP-EliteBook-840-G3: ~/Documents/CN/Lab_6/TCP
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ gcc TCPserver.c -o server
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ ./server
Receiving File in Binary encoded format...
File transfer has been initiated...
File has been Received...
File saved as : test_binary_TCP.bmp
Receiving File in BITMAP format...
File transfer has been initiated...
File has been Received...
File saved as : test_BITMAP_TCP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ diff sample.bmp test_binary_TCP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ diff sample.bmp test_BITMAP_TCP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ ls
client sample.bmp server TCPclient.c TCPserver.c test_binary_TCP.bmp test_BITMAP_TCP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$

viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ gcc TCPclient.c -o client
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ ./client
Enter the file name to be transfered with the extension : sample.bmp
Enter the file name you want the file to be saved with the extension : test.bmp
Sending File in Binary encoded format...
File transfer has been initiated...
File sent successfully...
Sending File in BITMAP format...
File transfer has been initiated...
File sent successfully...
Average Latency in Binary encoded format : 1691.366000 ms
Average Latency BITMAP format: 1711.933000 ms
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$
```

```
viknesh@viknesh-HP-EliteBook-840-G3: ~/Documents/CN/Lab_6/TCP
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ gcc TCPserver.c -o server
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ ./server
Receiving File in Binary encoded format...
File transfer has been initiated...
File has been Received...
File saved as : test_binary_TCP.bmp
Receiving File in BITMAP format...
File transfer has been initiated...
File has been Received...
File saved as : test_BITMAP_TCP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ diff sample.bmp test_binary_TCP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ diff sample.bmp test_BITMAP_TCP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ ls
client sample.bmp server TCPclient.c TCPserver.c test_binary_TCP.bmp test_BITMAP_TCP.bmp
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$
```

```
viknesh@viknesh-HP-EliteBook-840-G3: ~/Documents/CN/Lab_6/TCP
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ gcc TCPclient.c -o client
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$ ./client
Enter the file name to be transfered with the extension : sample.bmp
Enter the file name you want the file to be saved with the extension : test.bmp
Sending File in Binary encoded format...
File transfer has been initiated...
File sent successfully...
Sending File in BITMAP format...
File transfer has been initiated...
File sent successfully...
Average Latency in Binary encoded format : 1691.366000 ms
Average Latency BITMAP format: 1711.933000 ms
viknesh@viknesh-HP-EliteBook-840-G3:~/Documents/CN/Lab_6/TCP$
```

# Images



## ANALYSING THE PERFORMANCE

In both TCP and UDP, sending the file in binary encoded format is faster when compared to sending the file in BITMAP image file.

In UDP,

Latency of sending the file in Binary encoded format = 24623.766000 ms

Latency of sending the file in BITMAP image file = 25257.814000 ms

Difference between Latency =  $25257.814000 - 24623.766000 = 634.048000$  ms

In TCP,

Latency of sending the file in Binary encoded format = 1691.366000 ms

Latency of sending the file in BITMAP image file = 1711.933000 ms

Difference between Latency =  $1711.933000 - 1691.366000 = 20.567000$  ms