Write up

Implemented persistent connection in the following way :

- Set a length
- Kept the connection open with timeout of 10 seconds - So connection gets reused if request is made in the timespan.

Persistent vs Non-Persistent TCP connections :

Test conditions :

Recorded the time using time.h. The file size is **2014434 bytes** Ran the tcpclient using the following command

```
for i in `seq 1 10` :
do
./tcpclient -p 2000 -h localhost -f /file -t
done > pers.txt
```

The statistics is as follows:

Sending 1 to 10 files using non persistent server Each file is of 2014434 bytes.

```
Real     User     Sys

0.217s   0.018s   0.178s
0.581s   0.044s   0.467s
0.873s   0.069s   0.714s
1.030s   0.085s   0.832s
1.435s   0.115s   1.134s
1.879s   0.147s   1.490s
2.001s   0.163s   1.622s
2.501s   0.199s   2.040s
2.864s   0.226s   2.231s
3.157s   0.248s   2.488s
```

The time doesn't seem to increase linearly, possibly due to increased load and traffic. Since the non-persistent Http server closes the socket immedialtely, so no reuse takes place as well.

Sending 1 to 10 files using persistent server

```
Real       User      Sys

0.198s   0.016s  0.145s
0.327s   0.029s  0.267s
```

```
0.840s   0.069s  0.696s
1.000s   0.084s  0.818s
1.187s   0.101s  0.967s
1.650s   0.135s  1.355s
1.931s   0.158s  1.572s
2.370s   0.190s  1.869s
2.511s   0.206s  2.005s
2.838s   0.229s  2.245s
```

The time doesn't seem to increase linearly, but the throughput is slightly better due to socket reuse.

For just sending one 2 Mb file and averaging out after 10 time

Non persistent Http

```
Time taken 0.188812
Time taken 0.162422
Time taken 0.252917
Time taken 0.18025
Time taken 0.197345
Time taken 0.169124
Time taken 0.167161
Time taken 0.176085
Time taken 0.169622
Time taken 0.229706
Time taken 0.22821
```

Average : 0.212166199

Persistent Http

```
Time taken 0.133096
Time taken 0.215962
Time taken 0.131388
Time taken 0.161088
Time taken 0.193296
Time taken 0.141694
Time taken 0.178694
Time taken 0.214977
Time taken 0.24357
Time taken 0.15778
Time taken 0.161689
```

Average : 0.1933234

Packet loss in UDP :

No packet loss is observed when transferring data of small size , i.e < 20 kilobytes . But as packet size increases, greater packet loss is observed. When testing with a 2 Mb file a discernible loss occurs. The time taken to transfer and

the size recieved in 10 tries is as follows :

```
Total Size is : 2014434 Time taken 0.305561
Total Size is : 1987619 Time taken 0.259942
Total Size is : 2014434 Time taken 0.303734
Total Size is : 2014434 Time taken 0.298796
Total Size is : 2014434 Time taken 0.403613
Total Size is : 2014434 Time taken 0.339462
Total Size is : 2014434 Time taken 0.360929
Total Size is : 2014434 Time taken 0.351598
Total Size is : 2014434 Time taken 0.372711
Total Size is : 2014434 Time taken 0.371817
Total Size is : 1998319 Time taken 0.370614
Total Size is : 2012293 Time taken 0.310553
Total Size is : 2014434 Time taken 0.28811

$ ls -l | grep file
-rwxrwxrwx 1 root root 2014434 Feb 16 20:49 file
```

The actual size is 2014443 bytes, so it is pretty clear that packet loss occurs.