

CS 39006: Networks Lab

Assignment 3: Basic Socket Programing (Working with A Single Threaded File Transfer Application)

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Lab Report By:

Prajwal Singhanian – 15CS30043

Tanay Bhartia – 15CS30036

Observation for TCP server:

Q1. Total number of segments received for TCP and the segment size distribution

Ans.

i) For file1 (IGD.pdf):

Total Size - 4731875 Bytes

Segments received by the Server – 3068

Segments received by the Client – 1623

Segment size distribution for Server side (all in Bytes): 66, 74, 81, 106, 354, 1090, 1514, 1515

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	3068	1510.20	66	1514	0.1895	100%	8.5500	15.805
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	5	67.80	66	74	0.0003	0.16%	0.0200	0.000
80-159	2	93.50	81	106	0.0001	0.07%	0.0200	15.798
160-319	0	-	-	-	0.0000	0.00%	-	-
320-639	1	354.00	354	354	0.0001	0.03%	0.0100	15.917
640-1279	1	1090.00	1090	1090	0.0001	0.03%	0.0100	15.799
1280-2559	3059	1514.00	1514	1514	0.1890	99.71%	8.5400	15.805
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

Display filter: `ip.dst == 10.117.8.94` Apply

Segment size distribution for Client side (all in Bytes): 66, 74, 78, 81, 86, 94, 98

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	1623	68.12	66	98	0.1003	100%	4.6200	16.005
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	1534	66.80	66	78	0.0948	94.52%	4.6200	16.005
80-159	89	90.75	81	98	0.0055	5.48%	0.8700	15.909
160-319	0	-	-	-	0.0000	0.00%	-	-
320-639	0	-	-	-	0.0000	0.00%	-	-
640-1279	0	-	-	-	0.0000	0.00%	-	-
1280-2559	0	-	-	-	0.0000	0.00%	-	-
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

Display filter: `ip.dst == 10.117.8.245` Apply

ii) For file2 (sample.jpg):

Total Size – 4299451 Bytes

Segments received by the Server – 2787

Segments received by the Client – 1455

Segment size distribution for Server side (all in Bytes): 66, 74, 84, 647, 970, 1090, 1514

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	2787	1509.72	66	1514	0.0060	100%	8.6600	5.595
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	6	68.67	66	74	0.0000	0.22%	0.0200	0.000
80-159	1	84.00	84	84	0.0000	0.04%	0.0100	5.595
160-319	0	-	-	-	0.0000	0.00%	-	-
320-639	0	-	-	-	0.0000	0.00%	-	-
640-1279	3	902.33	647	1090	0.0000	0.11%	0.0100	5.595
1280-2559	2777	1514.00	1514	1514	0.0060	99.64%	8.6300	5.595
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

Display filter:

Segment size distribution for Client side (all in Bytes): 66,74,78,84,86,94,98

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	1455	67.31	66	98	0.0032	100%	4.7000	5.660
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	1389	66.25	66	78	0.0030	95.46%	4.2100	5.712
80-159	66	89.55	84	98	0.0001	4.54%	0.6400	5.704
160-319	0	-	-	-	0.0000	0.00%	-	-
320-639	0	-	-	-	0.0000	0.00%	-	-
640-1279	0	-	-	-	0.0000	0.00%	-	-
1280-2559	0	-	-	-	0.0000	0.00%	-	-
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

Display filter:

iii) For file3 (sampletext.txt):

Total Size – 1094614 Bytes

Segments received by the Server – 720

Segments received by the Client – 361

Segment size distribution for Server side (all in Bytes): 66,74,88,139,1090,1514

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	720	1487.58	66	1514	0.0024	100%	7.1000	12.809
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	9	68.89	66	76	0.0000	1.25%	0.0400	296.030
80-159	4	116.00	88	139	0.0000	0.56%	0.0200	12.809
160-319	0	-	-	-	0.0000	0.00%	-	-
320-639	0	-	-	-	0.0000	0.00%	-	-
640-1279	1	1090.00	1090	1090	0.0000	0.14%	0.0100	12.809
1280-2559	706	1514.00	1514	1514	0.0024	98.06%	7.0600	12.809
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

Display filter: `ip.dst == 10.117.8.94` Apply

Segment size distribution for Client side (all in Bytes): 66, 74, 78, 88, 98

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	367	67.62	66	568	0.0012	100%	3.5500	12.809
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	364	66.10	66	78	0.0012	99.18%	3.5400	12.809
80-159	2	93.00	88	98	0.0000	0.54%	0.0100	12.809
160-319	0	-	-	-	0.0000	0.00%	-	-
320-639	1	568.00	568	568	0.0000	0.27%	0.0100	296.031
640-1279	0	-	-	-	0.0000	0.00%	-	-
1280-2559	0	-	-	-	0.0000	0.00%	-	-
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

Display filter: `ip.dst == 10.117.8.245` Apply

Q2) Total number of retransmitted segments for TCP

Ans.

- i) For file1 (IGD.pdf): 8 packets retransmitted
- ii) For file2 (sample.jpg): 3 packets retransmitted
- iii) For file3 (sampletext.txt) : 1 packet retransmitted

Q3) Total time to receive the file

Ans.

- i) For file1 (IGD.pdf): 16.187s
- ii) For file2 (sample.pdf): 5.948s
- iii) For file3 (sampletext.txt): 12.918s