

Assignment 1

- 1) To run the server type “make” in command line, to run client run “make client”

Ethernet · 1 IPv4 · 2 IPv6 TCP · 1 UDP · 9											
Address A	Port A	Address B	Port B	Packets	Bytes	Packets A → B	Bytes A → B	Packets B → A	Bytes B → A	Rel Start	Duration
127.0.0.1	36180	127.0.0.1	9890	16	49 k	9	607	7	48 k	7.994348	7.9474

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tcp.port==9890

No.	Time	Source	Destination	Protocol	Length	Source Port	Info
21	7.994347860	127.0.0.1	127.0.0.1	TCP	74	36180	36180 → 9890 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM=1 TSval=1552267680 TSecr=0 WS=128
22	7.994359621	127.0.0.1	127.0.0.1	TCP	74	9890	9890 → 36180 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM=1 TSval=1552267680 TSecr=1552267680 WS=128
23	7.994367781	127.0.0.1	127.0.0.1	TCP	66	36180	36180 → 9890 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=1552267680 TSecr=1552267680
28	11.618463495	127.0.0.1	127.0.0.1	TCP	71	36180	36180 → 9890 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=5 TSval=1552271304 TSecr=1552267680
29	11.618509486	127.0.0.1	127.0.0.1	TCP	66	9890	9890 → 36180 [ACK] Seq=1 Ack=6 Win=65536 Len=0 TSval=1552271304 TSecr=1552271304
30	11.618655563	127.0.0.1	127.0.0.1	TCP	68	9890	9890 → 36180 [PSH, ACK] Seq=1 Ack=6 Win=65536 Len=2 TSval=1552271304 TSecr=1552271304
31	11.618677251	127.0.0.1	127.0.0.1	TCP	66	36180	36180 → 9890 [ACK] Seq=6 Ack=3 Win=65536 Len=0 TSval=1552271304 TSecr=1552271304
32	11.618752107	127.0.0.1	127.0.0.1	TCP	70	9890	9890 → 36180 [PSH, ACK] Seq=3 Ack=6 Win=65536 Len=4 TSval=1552271304 TSecr=1552271304
33	11.618765951	127.0.0.1	127.0.0.1	TCP	66	36180	36180 → 9890 [ACK] Seq=6 Ack=7 Win=65536 Len=0 TSval=1552271304 TSecr=1552271304
34	11.618872693	127.0.0.1	127.0.0.1	TCP	32834	9890	9890 → 36180 [ACK] Seq=7 Ack=6 Win=65536 Len=32768 TSval=1552271305 TSecr=1552271304
35	11.618910395	127.0.0.1	127.0.0.1	TCP	66	36180	36180 → 9890 [ACK] Seq=6 Ack=32775 Win=48512 Len=0 TSval=1552271305 TSecr=1552271305
36	11.618932378	127.0.0.1	127.0.0.1	TCP	15228	9890	9890 → 36180 [PSH, ACK] Seq=32775 Ack=6 Win=65536 Len=15162 TSval=1552271305 TSecr=1552271304
37	11.619025177	127.0.0.1	127.0.0.1	TCP	66	36180	36180 → 9890 [ACK] Seq=6 Ack=47937 Win=49152 Len=0 TSval=1552271305 TSecr=1552271305
50	15.941527309	127.0.0.1	127.0.0.1	TCP	66	36180	36180 → 9890 [FIN, ACK] Seq=6 Ack=47937 Win=65536 Len=0 TSval=1552275627 TSecr=1552271305
51	15.941691057	127.0.0.1	127.0.0.1	TCP	66	9890	9890 → 36180 [FIN, ACK] Seq=47937 Ack=7 Win=65536 Len=0 TSval=1552275627 TSecr=1552275627
52	15.941721268	127.0.0.1	127.0.0.1	TCP	66	36180	36180 → 9890 [ACK] Seq=7 Ack=47938 Win=65536 Len=0 TSval=1552275627 TSecr=1552275627

- 2)
 - A. 1 TCP connection is made between server and client
 - B. The client connects to the server on port 9890 and the server connects to the client on port 36180
 - C. 16 packets were exchanged between the transfer of the file between client and server
 - D. The time needed to download the file(size 49kb) =

Time of the last **ack** by the client - the Time of the first **psb** by server =
 11.619025177 - 11.618463495 = 0.000561682 = 0.5 MilliSeconds