CSE232: Assignment 3

1.

The C Source file for TCP server program for respective part is as follows:

a. socket_server_p.c

b. socket_server_t.c

c.

i. select.c

ii. poll.c

iii. epoll.c

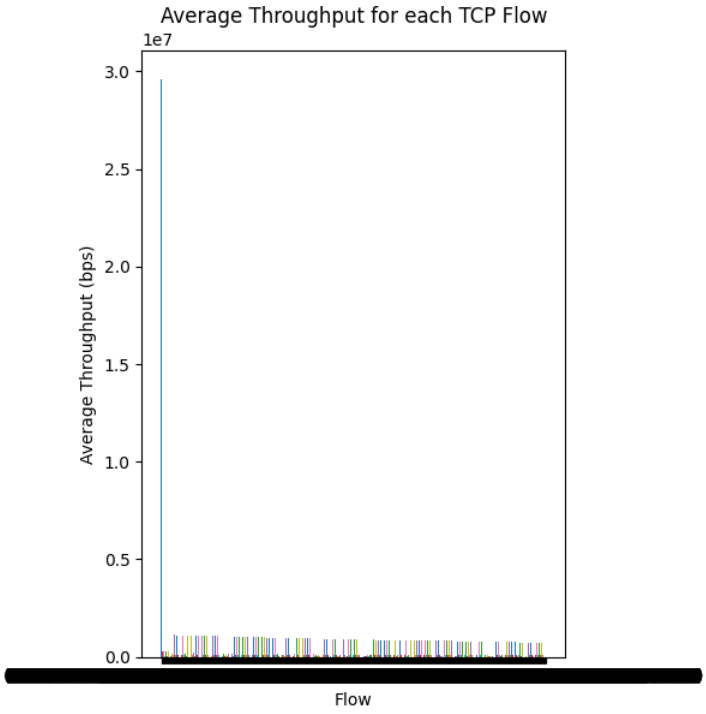
3.

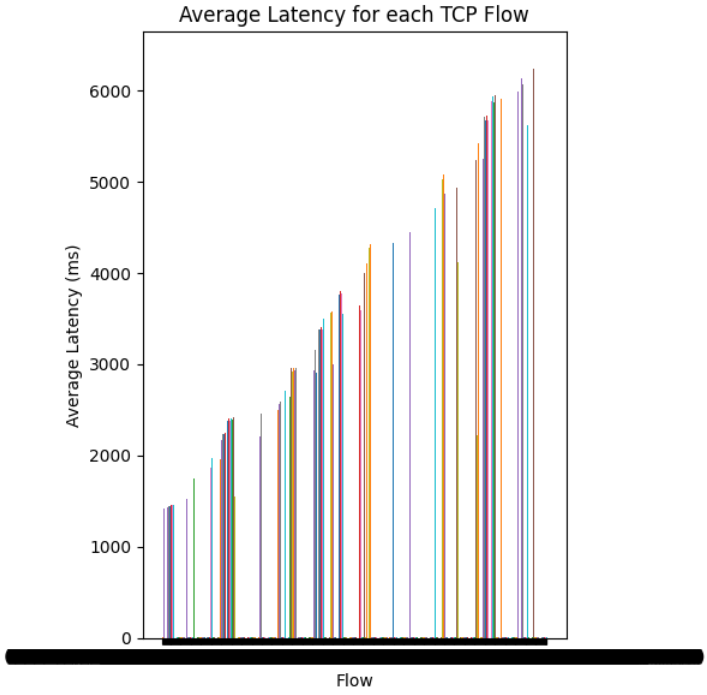
b.

The python script analysis.py takes the pcap file generated in (a) and computes the given metrics for each server experiment.

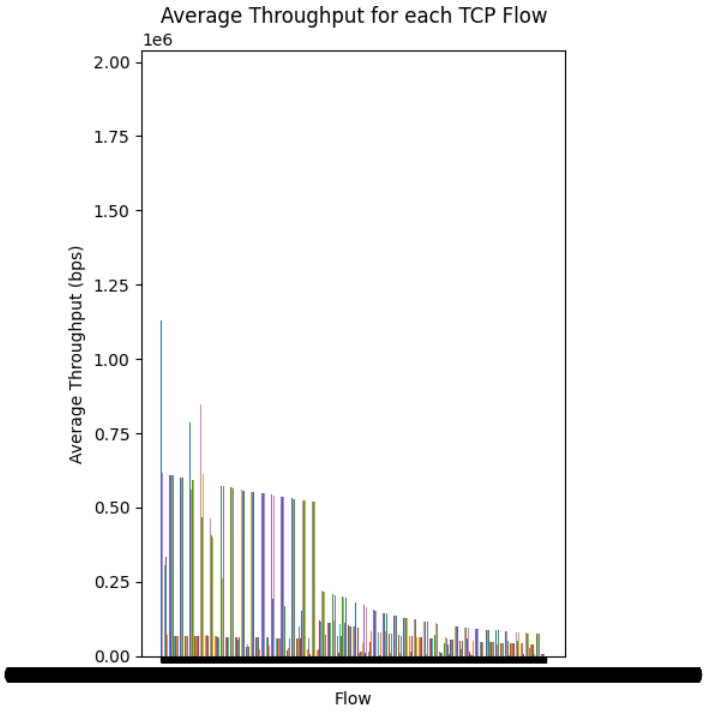
For each combination of <server_prog_type> <num_concurrent_clients> the plots for average throughput for each flow in bps and average latency of each flow in milliseconds is shown below:

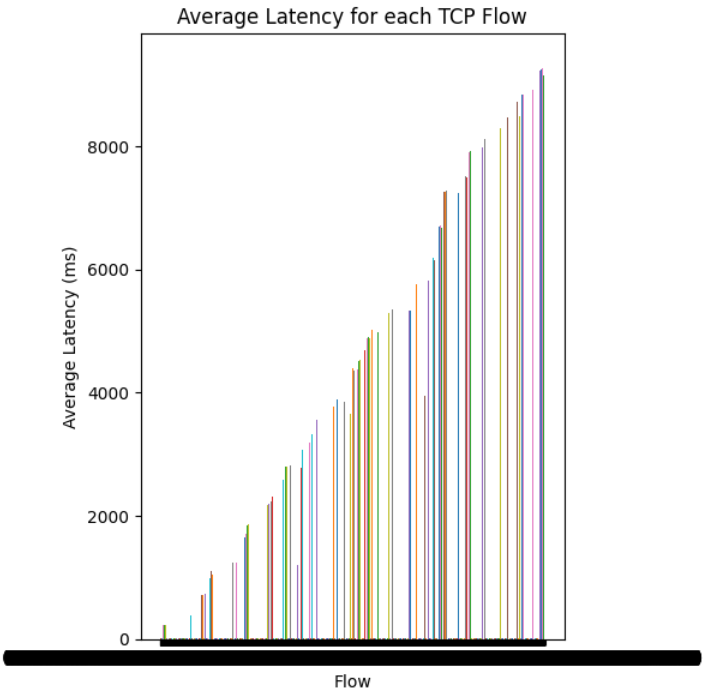
socket_server_p 500



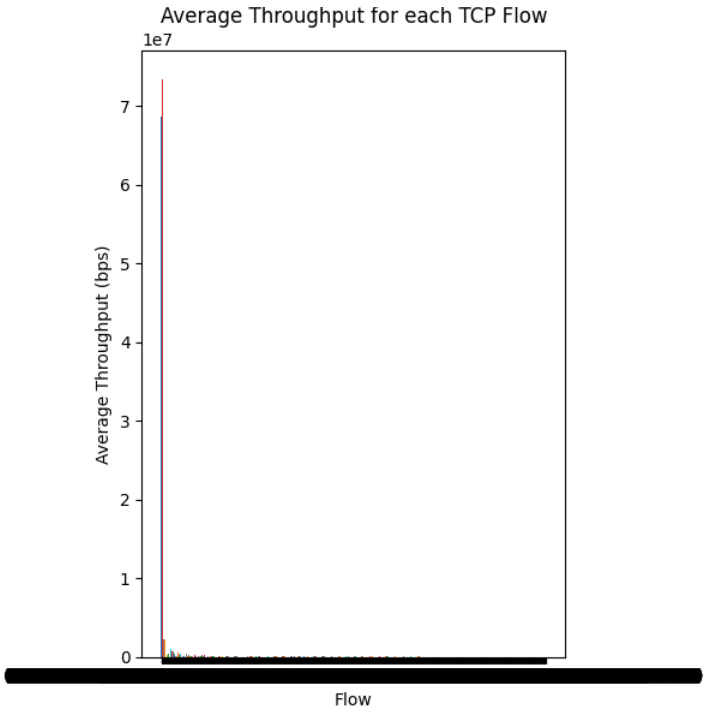


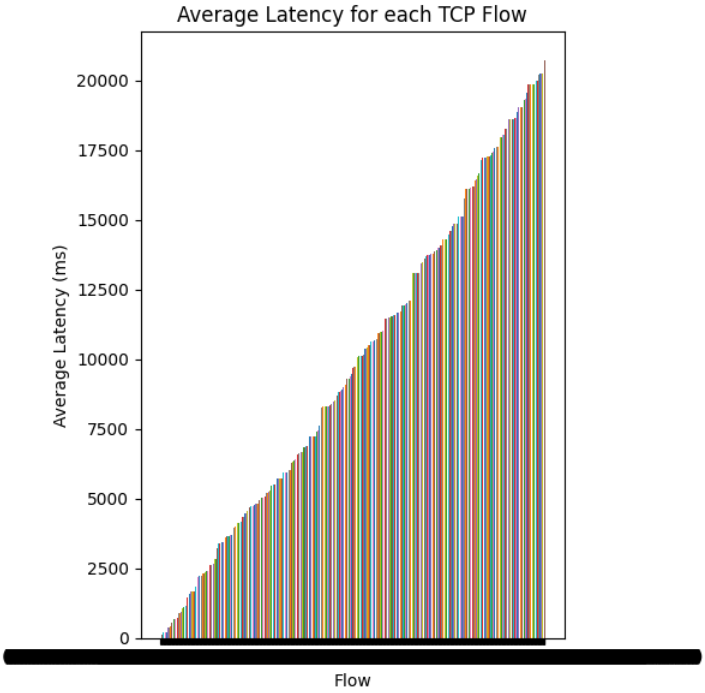
socket_server_p 1000



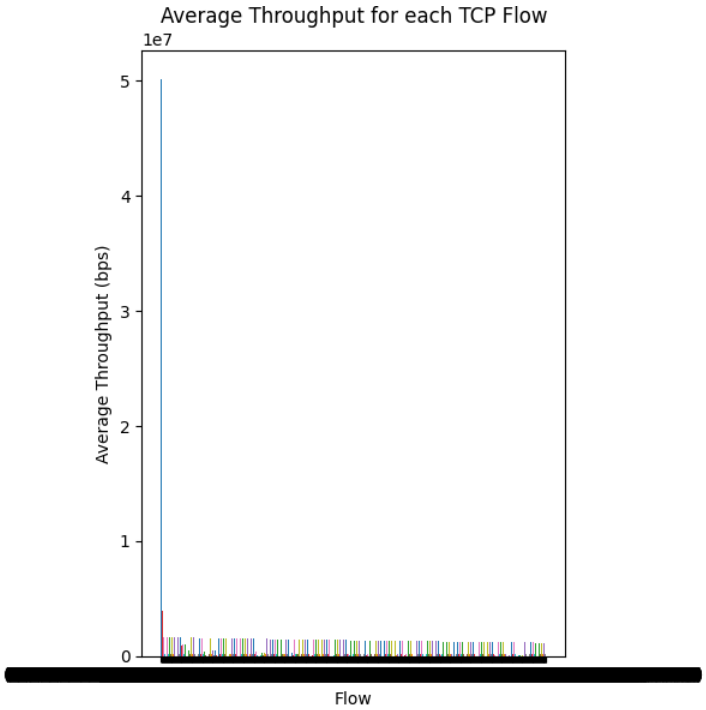


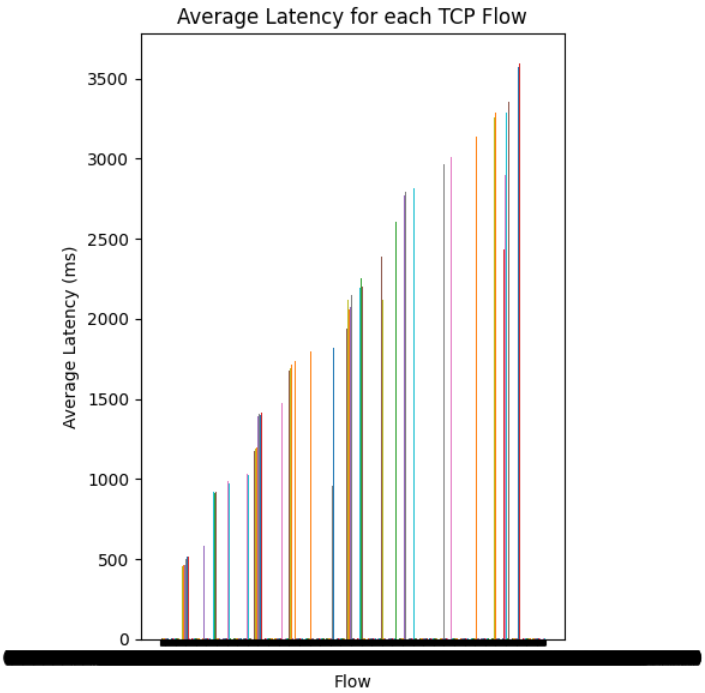
socket_server_p 3000



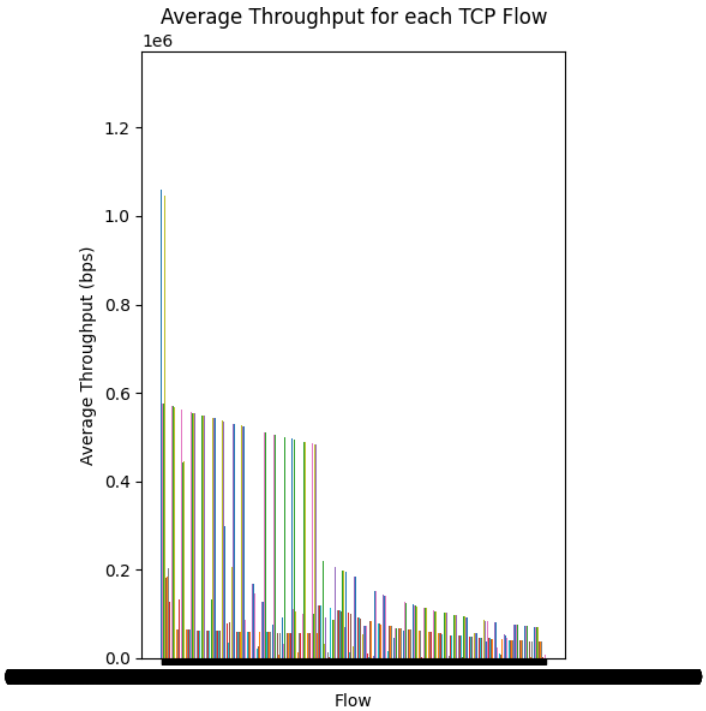


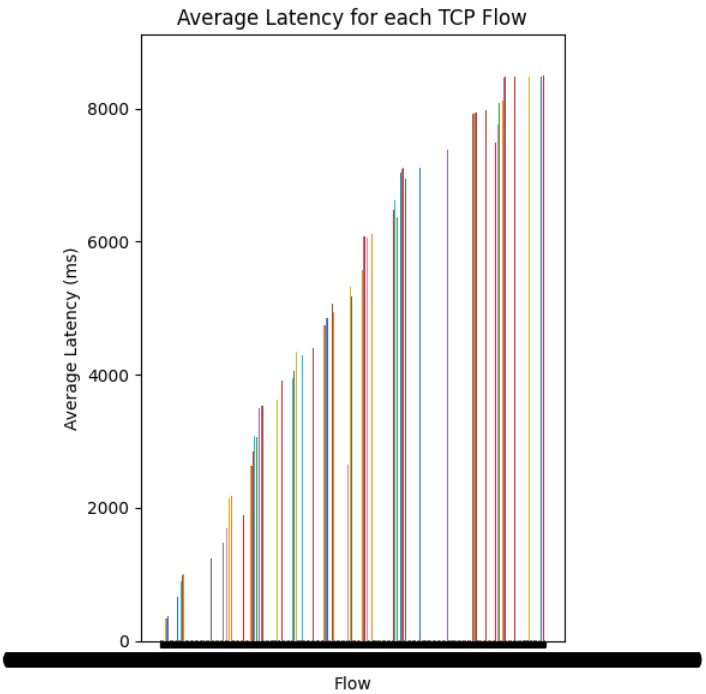
socket_server_t 500



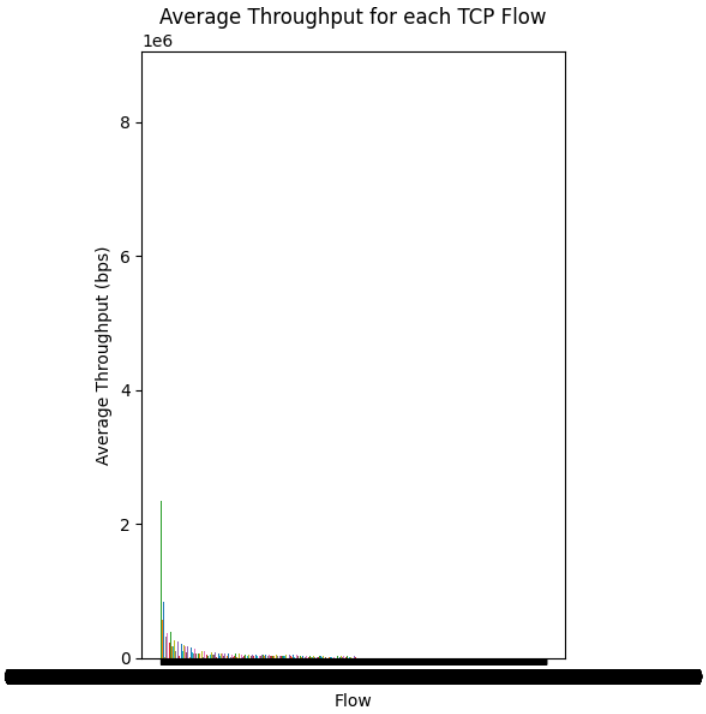


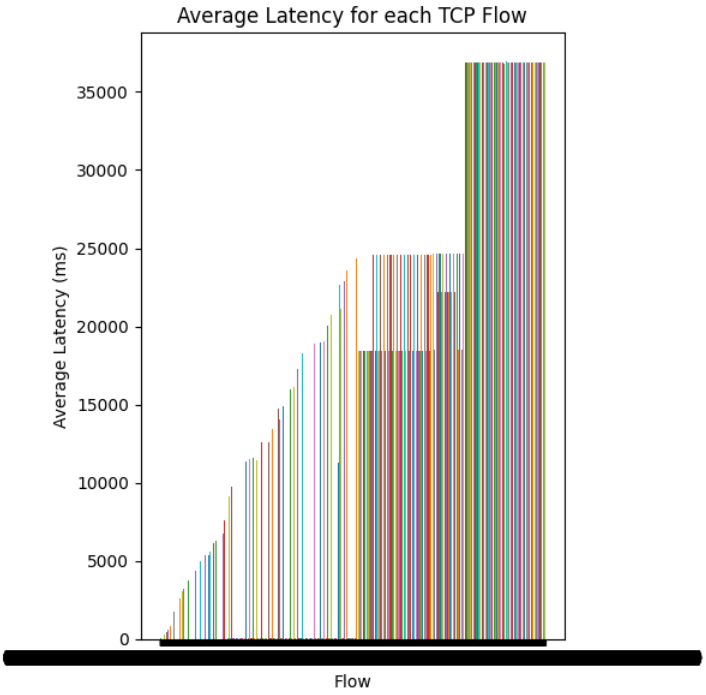
socket_server_t 1000



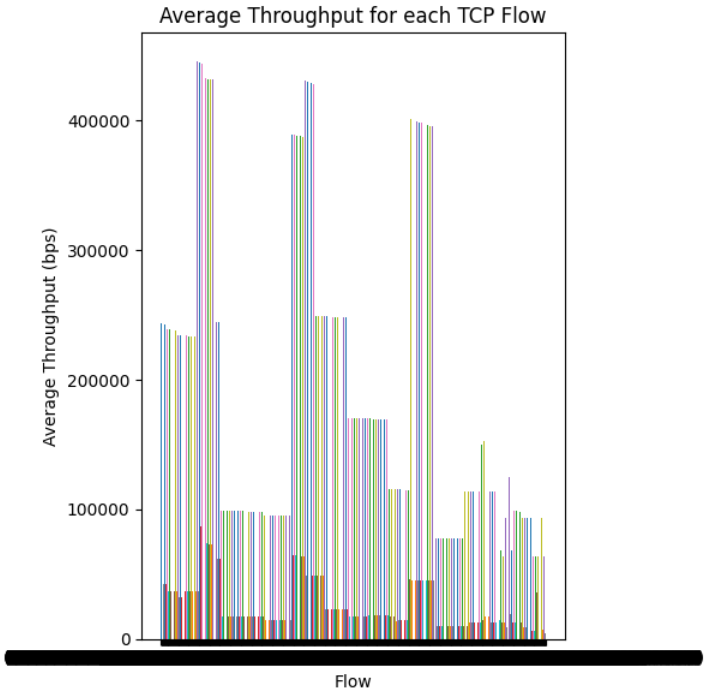


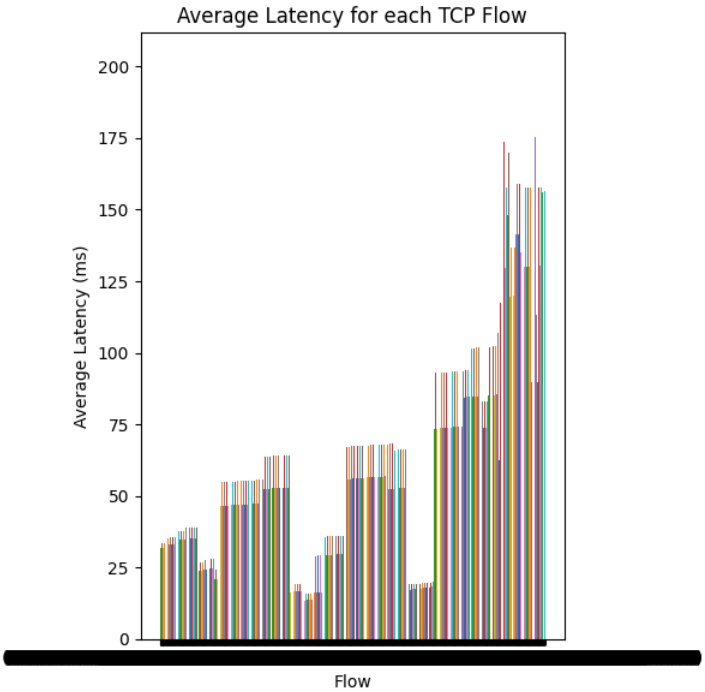
socket_server_t 3000



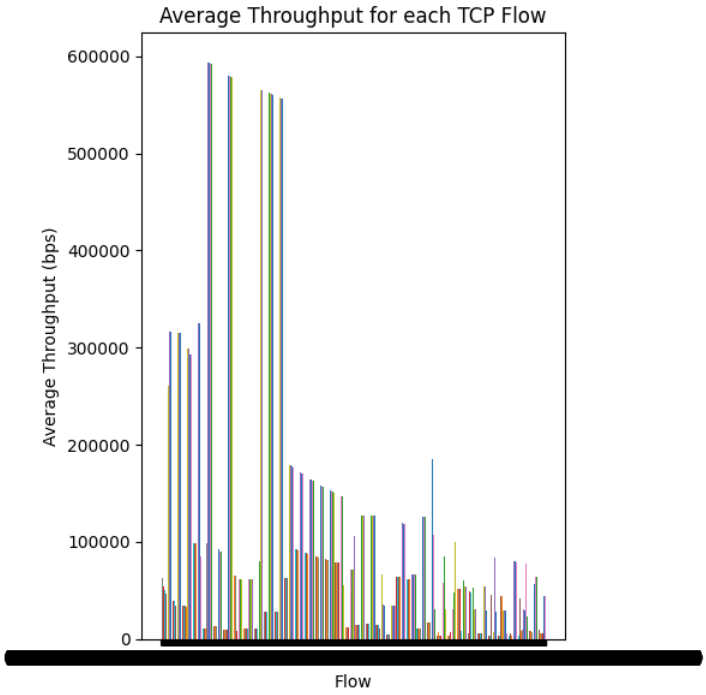


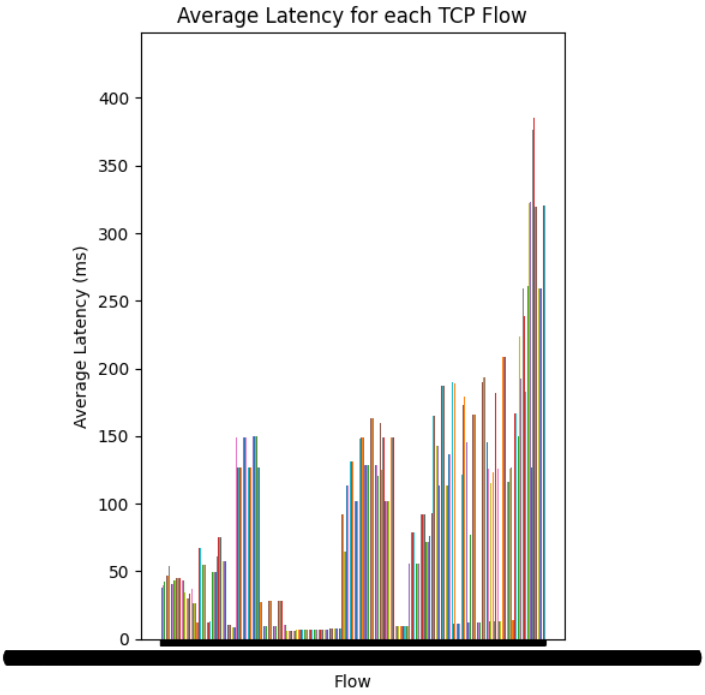
select 500



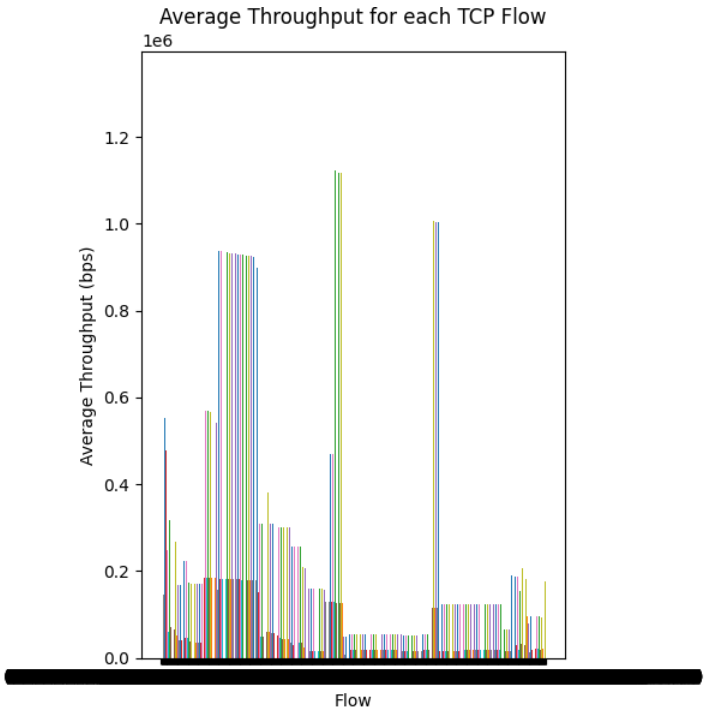


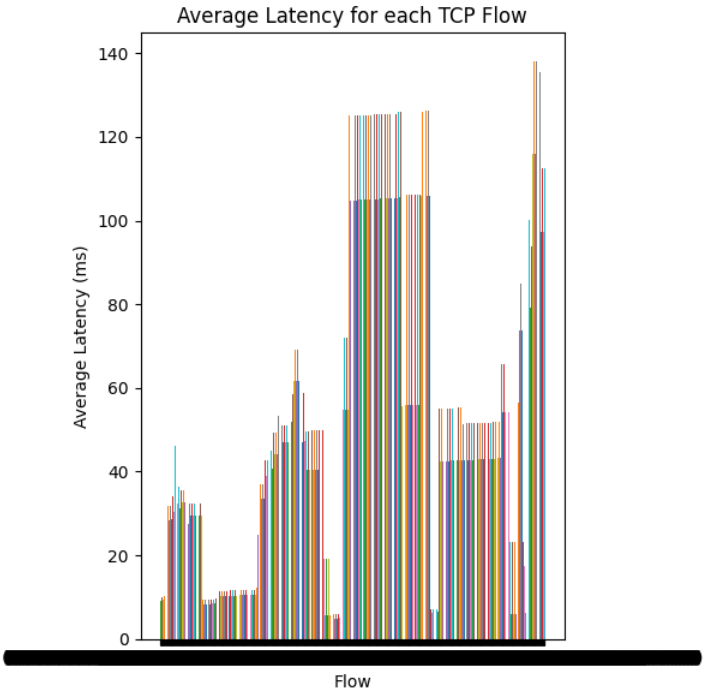
select 1000



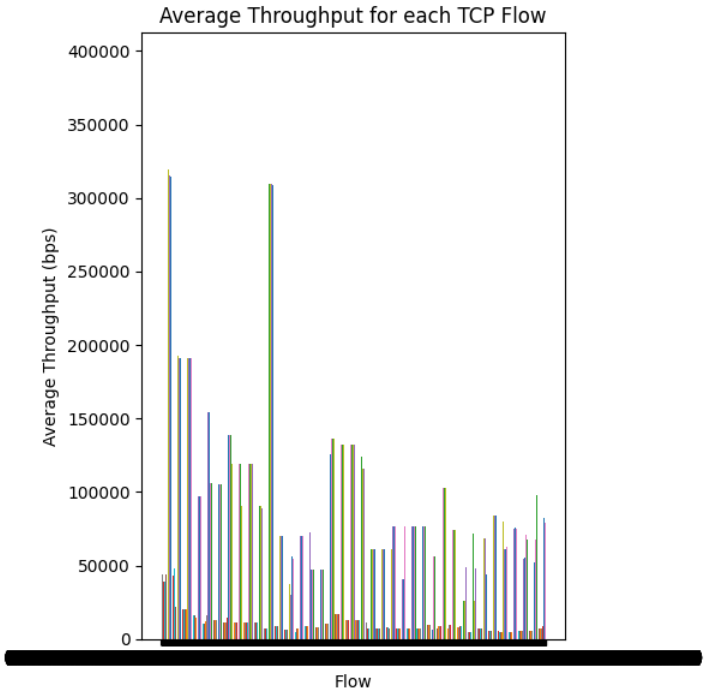


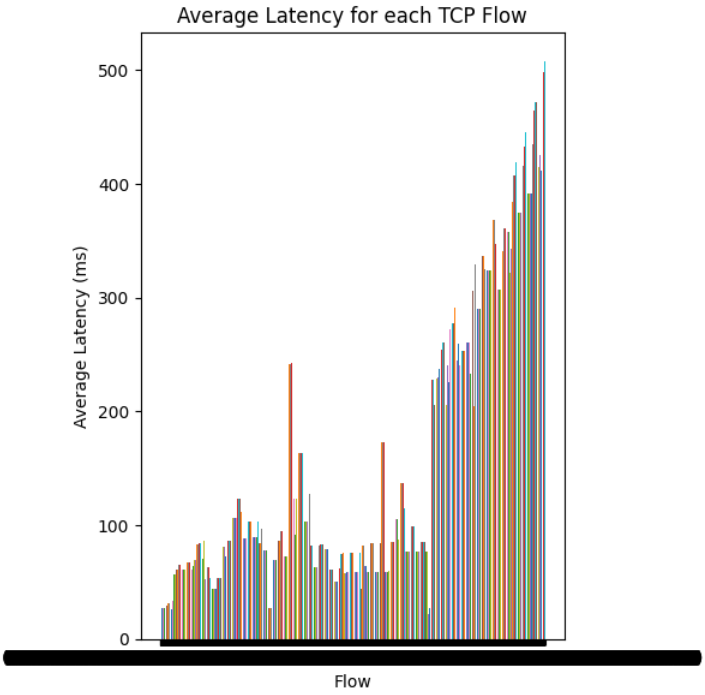
poll 500



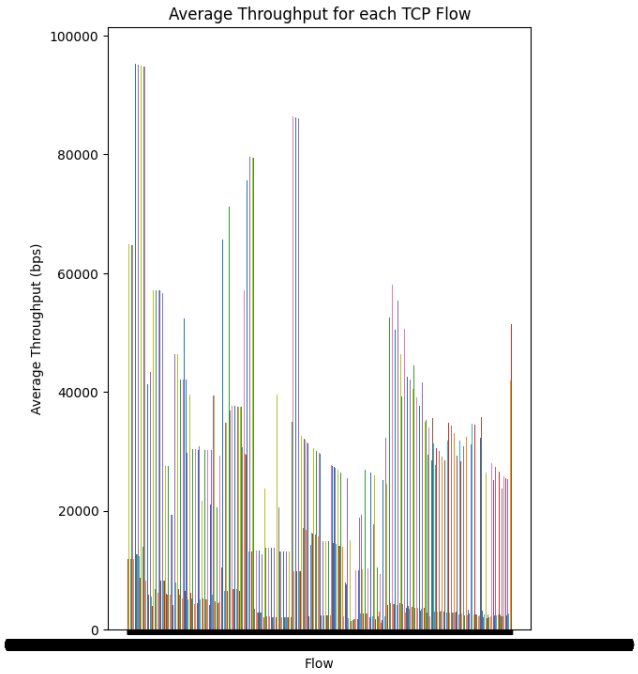


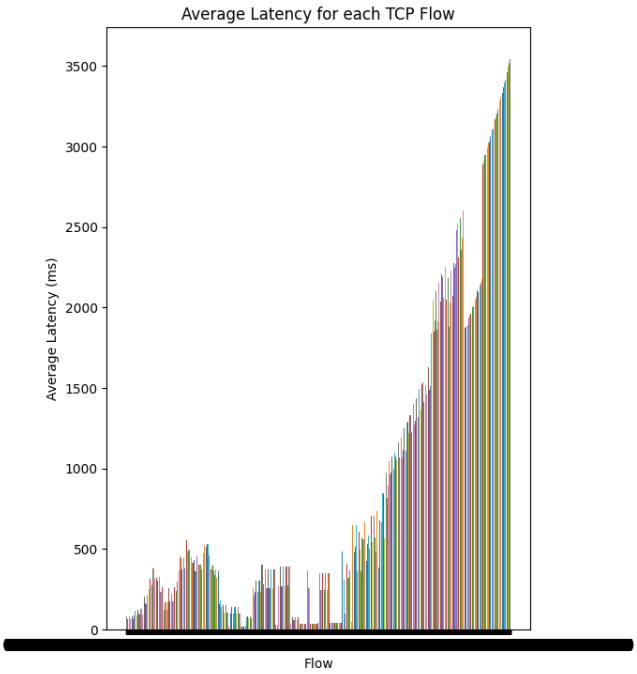
poll 1000



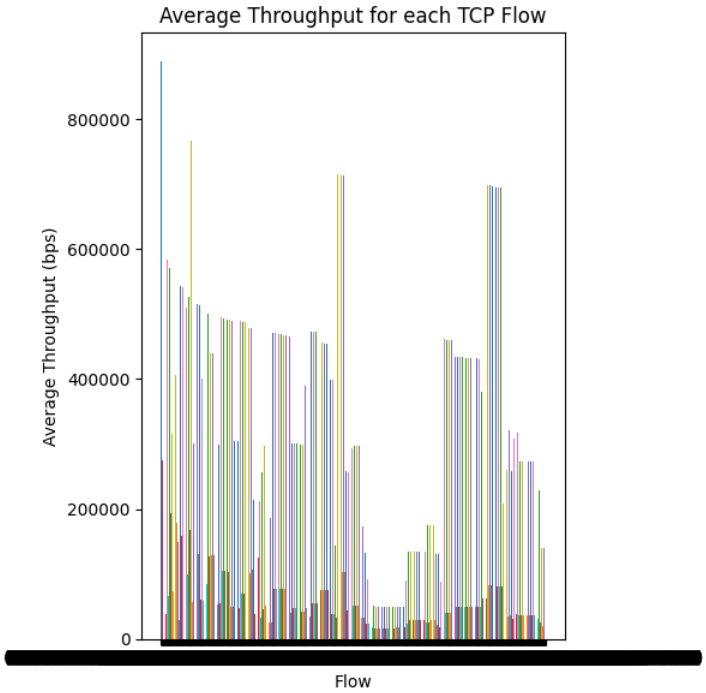


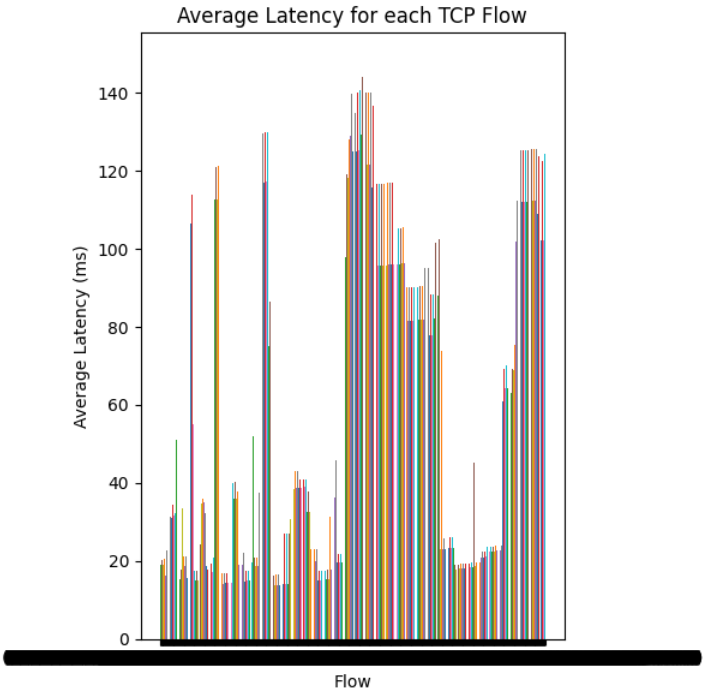
poll 3000



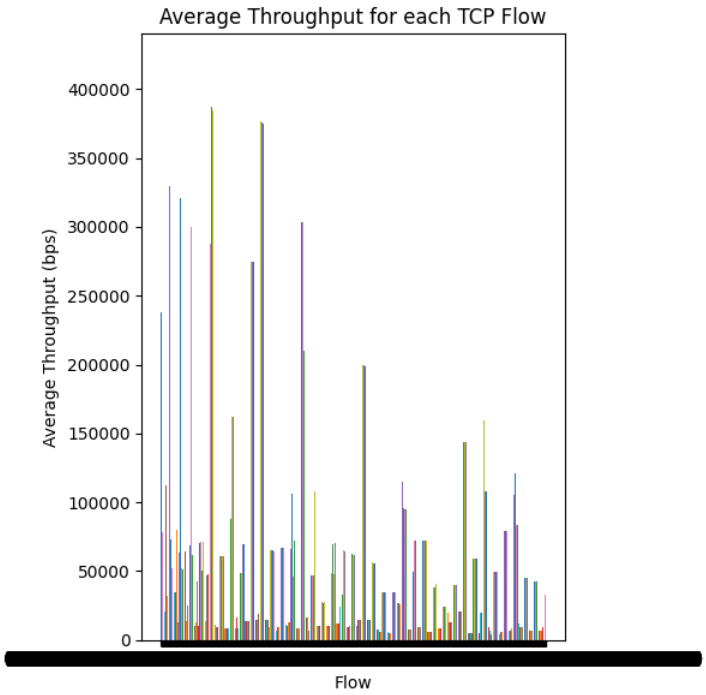


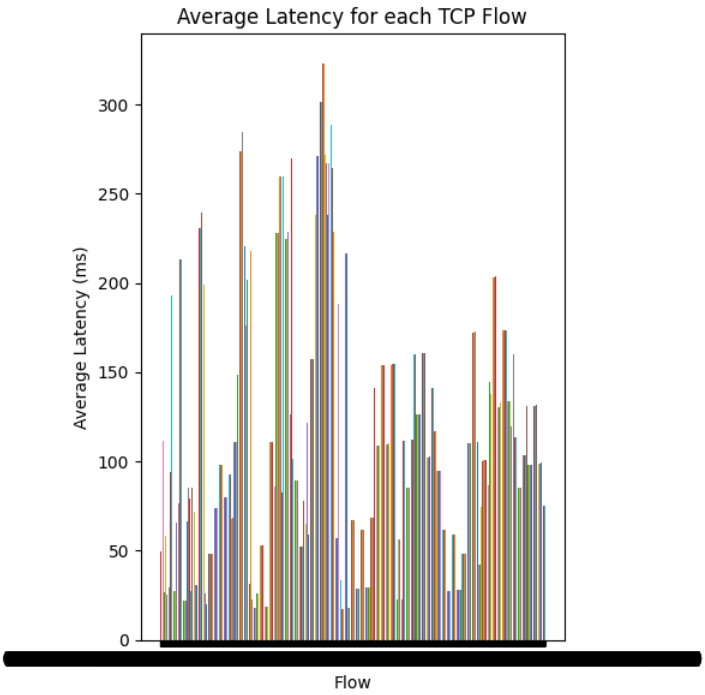
epoll 500



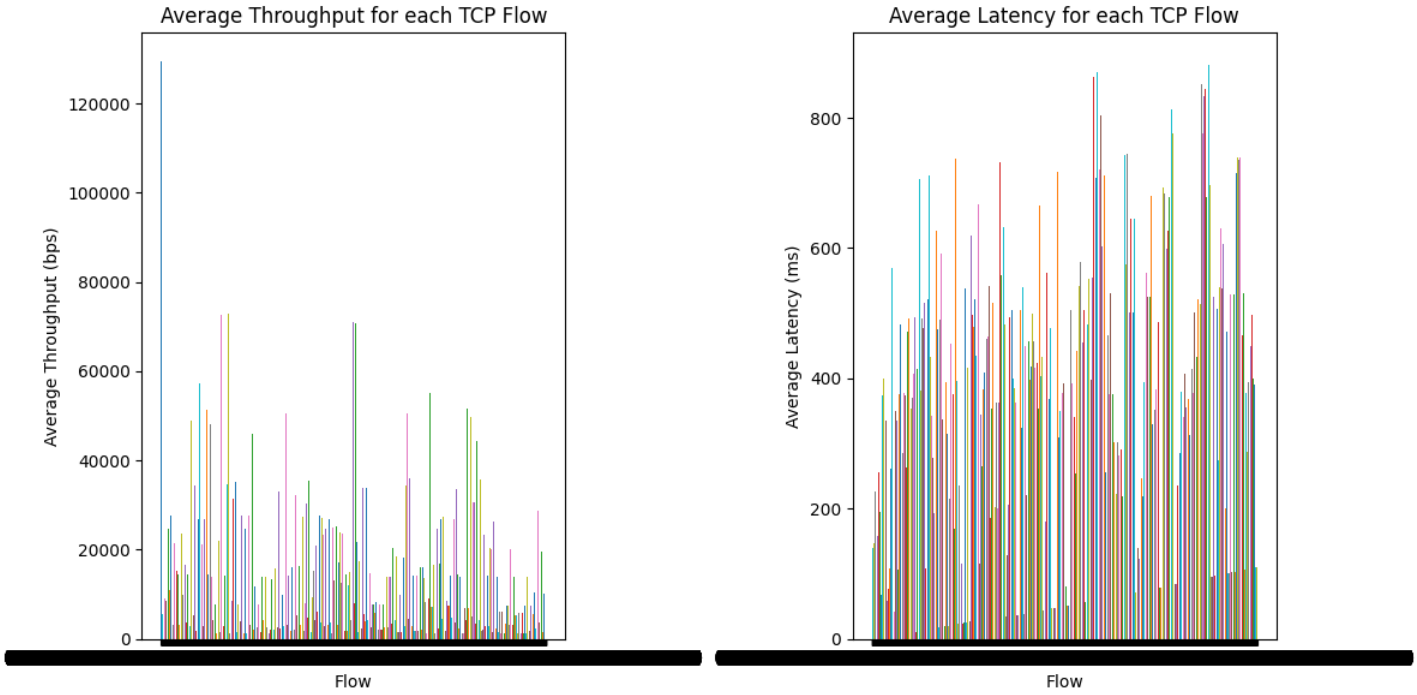


epoll 1000





epoll 3000



c.

For each combination of <server_prog_type> <num_concurrent_clients> the following table shows the server process's CPU utilization as percentage of CPU used and server process's memory utilization in kbytes:

num_concurrent_clients / server_prog_type	Server process's CPU utilization			Server process's memory utilization		
	500	1000	3000	500	1000	3000
Multiple processes	3.3	4.6	8.6	984	1024	1032
Multiple threads	6	7.3	13.8	1200	1336	1364
select()	56.8	62.6	89.6	1664	1756	1786
poll()	23.6	57.5	86	1686	1764	1792
epoll	22.3	49.6	82.8	1668	1712	1764

We can infer from the table that as the <num_concurrent_clients> increases the server process's CPU and memory utilization also increases.