IERG4180 Network Software Design and Programming

REPORT

for project 1

This project is to demonstrate the Code Design Architecture, Functions and Experimental results.

Code Design Architecture

The parameters required by the program are used as global variables and given default values before main(). All of the functions used also declared following these variables.

Here MODE is used as a parameter, 0 represents send mode, 1 represents recv mode, and 2 represents host mode. It can be clearly found in main() that the program will first perform parameter parsing argParse(argc, argv), then summarize and print the parameter information printInfo(), and then create socketInitSocket() finally, run its own function according to its Mode, which divided into tcpRecv(), tcpSend(), udpSend() and udpRecv().

Functions

As for argParse(argc, argv), the library <getopt.h> is used which located the scr folder, recommended by Jack. In argParse(), validIPAddress(char* queryIP) and isNumber(char* num) are used to verify that parameter values are valid. encode_pkt(char* msg, int i) is to set seq number i into msg like "999#00000". decode_pkt(char* msg) is to extrate the seq number from msg.

During one stat (display time interval), loss_cal(set<int> set, int start, int end) runs to get loss percentage. Set is to collect all the pkt seq number and start is the first pkt seq coming, end is last pkt.

Experiments

1

pktsize 64: Reciver:[Elapsed] 500.00 ms, [Pkts] 20647, [Rate] 21.14253 Mbps, [Lost] 0.00000%, [Jitter] 0.002017 ms cpu 18%

Pktsize 256 Reciver:[Elapsed] 500.00 ms, [Pkts] 20136, [Rate] 82.47706 Mbps, [Lost] 0.00000%, [Jitter] 0.001890 ms cpu 21

Pktsize 1024 Reciver:[Elapsed] 500.00 ms, [Pkts] 19987, [Rate] 327.46701 Mbps, [Lost] 0.00000%, [Jitter] 0.000568 ms cpu23

Pktsize 4096 Reciver:[Elapsed] 500.00 ms, [Pkts] 19097, [Rate] 1251.54099 Mbps, [Lost] 0.00000%, [Jitter] -0.000291 ms cpu 23

Pktsize 8192 Reciver:[Elapsed] 500.00 ms, [Pkts] 19343, [Rate] 2535.32570 Mbps, [Lost] 0.00000%, [Jitter] -0.001364 ms cpu 23

Pktsize 16384 Reciver:[Elapsed] 500.00 ms, [Pkts] 17873, [Rate] 4685.29971 Mbps, [Lost] 0.00000%, [Jitter] 0.000662 ms cpu 23

Pktsize 32768 Reciver:[Elapsed] 500.00 ms, [Pkts] 15863, [Rate] 8316.78054 Mbps, [Lost] 0.00000%, [Jitter] -0.001486 ms cpu 23

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Pkt64 Receiver:[Elapsed] 500.00 ms, [Pkts] 19511, [Bytes] 1248704 B, [Lost] 80.15380%,[Rate] 19.97926 Mbps, [Jitter] -0.015838

Pkt256 Receiver:[Elapsed] 500.00 ms, [Pkts] 19736, [Bytes] 5052416 B, [Lost] 80.66728%,[Rate] 80.83866 Mbps, [Jitter] -0.016181

Pkt1024 Receiver:[Elapsed] 500.00 ms, [Pkts] 19736, [Bytes] 20209664 B, [Lost] 80.67107%,[Rate] 323.35462 Mbps, [Jitter] -0.014013

Pkt4096 Receiver:[Elapsed] 500.00 ms, [Pkts] 19398, [Bytes] 79454208 B, [Lost] 80.26392%,[Rate] 1271.26733 Mbps, [Jitter] -0.017561

Pkt8192 Receiver:[Elapsed] 500.00 ms, [Pkts] 19515, [Bytes] 159866880 B, [Lost] 80.05009%,[Rate] 2557.87008 Mbps, [Jitter] -0.013801

Pkt16384 Receiver:[Elapsed] 500.00 ms, [Pkts] 19246, [Bytes] 315326464 B, [Lost] 78.88350%,[Rate] 5045.22342 Mbps, [Jitter] -0.015170

Pkt32768 Receiver:[Elapsed] 500.00 ms, [Pkts] 19176, [Bytes] 628359168 B, [Lost] 75.80926%,[Rate] 10053.74669 Mbps, [Jitter] -0.011225

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After running with buffer size with 100, 1000, 1000, 10000 with pktsize 1000, the udp loss is all around 80%.