

Computer Networks Lab (CS 3272)

Assignment – 4

Assigned date: 15-Feb-2022

Submission date: 22-Feb-2022

The aim of this assignment is to make you familiar with UDP Socket Programs (server & client) and understand the skeleton code. Use the given codes in the following programming assignments:

1. Ping-Pong

You have to write a client ping program in C. Your client will send a simple “ping” message to a server, receive a corresponding “pong” message back from the server, and determine the delay between when the client sent the ping message and received the pong message, which is termed as the *Round-Trip Time (RTT)*.

For the assignment, your ping program has to send 10 ping messages to the target server over UDP. For each message, the client is to determine and print the RTT when the corresponding pong message is returned.

Because UDP is an unreliable protocol, a packet sent by the client or server may be lost. For this reason, the client cannot wait indefinitely for a reply to a ping message. You should have the client wait up to one second for a reply from the server; if no reply is received, the client should assume that the packet was lost and print a message accordingly.

2. Mathe-magic

You have to write a math server program in C to solve simple arithmetic problems given by a client. The server shall use a standard format for accepting inputs - *operator: first-value: second-value*. It is the server’s responsibility to understand the input and delegate to the proper methods such as “add”, “sub”, “mul”, or “div.” The result of the arithmetic operation has to be returned as a response to the client.

Because UDP is an unreliable protocol, a packet sent by the client or server may be lost. For this reason, the client cannot wait indefinitely for a reply. You should have the client wait up to one second for a reply from the server; if no reply is received, the client should assume that the input packet was lost and print a message accordingly. Similarly, if the input is not received in correct form or part of it is lost due to unreliable transmission, the server should throw an error message.