

# Networked Systems Programming (A.A. 2023/24)

Lab n. 2 – October 26, 2023

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## Exercise 2.1

Download `serverStream.c` and `clientStream.c` from the lecture 12 folder (Handy), compile and run them locally (by using the loopback address `127.0.0.1` for IP communication). Exploit Wireshark to capture data exchanged between client and server and identify the TCP segments that contain the transferred data.

Change the application to avoid the communication of the constant string and use again Wireshark to capture exchanged data.

## Exercise 2.2

Write a client/server application to remotely multiply two integer values. The client must read from the standard input two integer numbers and send them to the server. The server, after the reception of the two numbers, multiplies them, and sends the result to the client. Use the stream-oriented communication model (TCP). Exploit Wireshark to capture data exchanged between client and server and identify the TCP segments that contain the transferred data.

## Exercise 2.3

Change the code of the first exercise such that the client sends the name of the user (read from the `stdin`) in the request message and change the response message to contain also the name of the user.

The client should show a message like the following: “Eugenio, you are the 6° user of this server”, where Eugenio is the name passed by the client and 6 is the number of contacts received by the server.

Consider a first implementation where we assume a constant length ( $< 256$ ) for the string containing the user name and a second implementation where the request message size depends on the actual size of the string. Exploit Wireshark to analyze the content of the message exchanged.

## Exercise 2.4

Write a client/server application whose client iteratively reads a string from the standard input and sends it to the server that writes it on the standard output. Use the stream-oriented communication model and define the application protocol to reduce the number of bytes to transfer on the network channel. Assume that the dialog can be interrupted, and the connection sockets closed when the client sends a string ending with ‘.’.

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Upload the exercises of this lab into your shared folder before October 29, 2023.

Upload also the Wireshark capture files and a simple document with screenshots to show the content of the messages.