

System Programming

6th Laboratory (2 ... 5 April 2019)

I

Modify the last exercise from the previous laboratory to use INET domain stream sockets. The server will create one thread for each client that connects. This thread will receive the values from the client, verify if those values are prime, and if they are, send a reply back to the client.

II

Change the supplied code (galo.zip), to allow two users in different computers to play the tic-tac-toe game (jogo do galo).

The supplied code allows two users to play in the same machine and has all the functions necessary to the game:

- clear_board – clears the 3x3 board
- print_board – prints a board on the screen
- ver_win – verifies if a player has won the game
- read_play – reads a play by guaranteeing that the 2 numbers are valid
- put_play – put a piece on the board. This function verifies if the play is valid

The new version of the game should allow two players in different computers to play against each other. Use INET domain stream sockets.

Before starting to change the code follow these steps:

- Observer the various functions
- Define what functions are to be executed on the server and what functions should execute on the clients
- Decide what information is exchanged between the server and the client
- Define the flowchart for the server
 - Define how many sockets will be needed
 - Decide whether threads are needed
- Define the flowchart for each client
- Define the port for the game server
- Start coding the program

REFERENCES

<https://fenix.tecnico.ulisboa.pt/downloadFile/845043405486513/06-Sun-ProgGuide-IPC.pdf> (section 7)