UNIVERSIDADE DE COIMBRA
FACULDADE DE CIÊNCIAS E TECNOLOGIA
DEPARTAMENTO DE ENGENHARIA ELECTROTÉCNICA E DE COMPUTADORES

Computer Networks

Practical Laboratory Work

Sockets Programming (Introduction)

Name: _____ Partner: _____

Date: ____/____/____ Class: ____

The objective of these experiments is to acquire basic knowledge about sockets programming.

Equipment used: the PCs of the Computer Networks Lab., with the Linux operating system.

Assembly: not required, because all equipment is already set up.

Perform the following actions, indicating the result where required.

1- Open a console window (command line).

2- Create the working directory "aulaRC" (inside your *login* directory):
>mkdir aulaRC

3- Copy the files *client_intro.c* and *server_intro.c* to your working directory (aulaRC).

4- Indicate the name of your host:
>hostname

_____

5- Change to your working directory (aulaRC):
>cd aulaRC

6- Compile both programs (*client_intro.c* e *server_intro.c*), maintaining their names:
>gcc client_intro.c –o client_intro
>gcc server_intro.c –o server_intro

7- By inspection of the source code, indicate what the client program does (from the point of view of the user and in the absence of errors):

1._____

2._____

3._____

_____

8- By inspection of the source code, identify what the server program does (from the point of view of the user and in the absence of errors)

1._____

2._____

_____

9- Let's start by executing both programs in the same host, in different console windows. Use port 50000 or other that is free. Start by initiating the server program. Check that the program remains waiting (for a client request).
>./server_intro 50000 OK □ NOK □

10- Open a new console window in order to enable having both programs in execution simultaneously. Execute the client program in that new console.
>./client_intro localhost 50000 OK □ NOK □

11- Message introduced in the client console window: _____

12- Message written by the server program in its console window:_____

_____

13- Message written by the client program in its console window: _____

14- Repeat the previous sequence (executing both server and client programs) twice, by indicating now, when executing the client program, the name of the host and its IP address, instead of "localhost". OK □ NOK □ OK □ NOK □

15- Repeat the previous sequence (executing both server and client programs) twice, by using two hosts, one for the client program and another for the server. Exchange the programs for the second repetition (by executing the server in the host where you ran the client in the first repetition and vice versa). Use the name of the hosts or their IP addresses.
OK □ NOK □ OK □ NOK □

16- Let's now execute two server programs in the same host, in different console (terminal) windows, using the same port (port 50000 or other that is free).
1st program: Did it work? Yes □ No □. Error message: _____
2nd program: Did it work? Yes □ No □. Error message: _____

_____

17- Let's now execute the client program, providing the name of a non existing host (and using port 50000, if available).
Did it connect to the server? Yes □ No □. Error msg: _____

18- Let's now execute the server program, but with a port number dedicated to another application (may be port 53, dedicated to DNS). Did it work (socket created)? Yes □ No □.
Error message: _____