

## Redes de Computadores / Computer Networks

# Home work (assignment for evaluation)

## SetEvent

The aim of this work is to develop (in C / C++) a client-server computer program (SetEvent) that informs clients of a list of events and allow them to choose and register in one of those events. The events list is saved in a text file and the registrations of the several clients are saved on other text files, one file per event.

Each user can register only once on each event. Repeated registrations on the same event are not accepted and are not acknowledged.

Communication protocol:

The client sends the user name.

The server confirms / validates user name. (Extra)

The server sends list of events (event number, location, date, expected duration and vacancies/seats).

The client sends the number of the desired event and the number of people/seats.

The client receives the confirmation indicating the event location, time, duration, places requested, as well as the total number of registrations in that event, so far.

The SetEvent client opening screen could be like this:

```
SetEvent Client 2017
by [authors' name(s)] (DEEC-UC)

Current event server: [IP or server name]
Current port: 50000

Menu:
0. Exit
1. Set event server
2. Set port (49152-65535)
3. Get list of events
4. Make registration
5. Show registration list [extra]
```

The “Exit” option asks the user for a confirmation and exits the software if the exit is confirmed.

The “Set event server” option asks the user for a destination host (IP address, for instance).

The “Set port” option asks the user for the port number to be used. There should be an information to the user saying the dynamic or private port numbers range (49152–65535).

The “Get list of events” option starts the connection and shows the obtained list of events offered by the current server.

The “Make registration” option asks the user for the number of the wanted event and places and send that information to the server (that saves it in the corresponding file).

The “Show registration list” option prints on screen the registrations performed by the user.

Omissions in these rules can be decided by students.

Write a short report (one A4 page) on the program developed, including the specifications and a user and a programmer’s manual. Comment the implemented code.

Students should capture and analyze the transmission of the test packets using Wireshark, including the results in a short report.

On a separate page you can (and should) make suggestions about changes and enhancements to the software and to this work proposal (specifications).

The work will be presented orally and you may be asked to make changes to the software.

This homework may be done individually or in groups of two. You’re supposed to use exclusively your own written software code (you may not copy and paste other author’s software).

Deadline: 2018-01-10.

The defenses are expected to take place in the next days after the deadline.

### **Extras**

The students can implement some extra features to obtain extra credits. Suggestions:

- a) User has to authenticate. Passwords should be encrypted.
- b) Server user can approve or disapprove new users. User has to authenticate. Passwords should be encrypted.
- c) Management of a list of users. In clients and servers.
- d) Management of a list of events. In clients and servers.
- e) Have a shortcut list of servers (editable).

### **Bibliography:**

- Computer Networking: a top-down approach, Kurose and Ross, Pearson, 2008.
- <http://www.cs.rpi.edu/courses/sysprog/sockets/sock.html> (Sockets Tutorial).
- <http://www.beej.us/guide/bgnet/output/html/singlepage/bgnet.html> (Beej's Guide to Network Programming Using Internet Sockets).