EX4: Chat Server with select

In this exercise you'll implement a simple chat server using TCP and select().

You'll write chatserver.c.

The server waits for clients' request. Once the server reads a message from the client, it reads it till a new line appears.

The server should be run like this:

./server <port>

The server can talk with many clients, each on a different socket.

The server gets a message from the client and send it to all clients except the one who sends it.

The server assigns names to each client, the name is 'guest<sd>' where sd is the socket descriptor assigned to this client after 'accept()' returns.

Note that there is only one thread (the main thread), therefore, any I/O operation should never block.

You can assume that the maximum length of a line that the server reads from each client is 4096.

You should use select to handle all sockets' descriptors for reading and writing so you should maintain both readset and writeset. Before any I/O operation you should verify that the socket is ready for the operation.

You should maintain a queue (you can use your list from the first exe) to save active sockets descriptors, and any other information you may need.

For example, if the server reads information from client guest4, this information should be saved in the queue, and on the next call to select, all other sockets should be checked for writing. If the queue is empty, you should not check descriptors for writing.

If client guest3 writes the message: "hello everyone\r\n", you should print to all other clients: guest3: hello everyone\r\n

If the client writes a message in multiple lines, the server should print only one line in each select iteration.

Try to write efficient code :)

In case of any failure, use perror/fprintf and exit.

Whenever your socket is ready to read or write please print:

"server is ready to read from socket <sd>\n" or

"Server is ready to write to socket <sd>\n"

Your program should never be in "busy-wait"

There should be only one call to select in your code.

GOOD-LUCK!