CS350 – OS - HOMEWORK 3 – Call Center (20 points)

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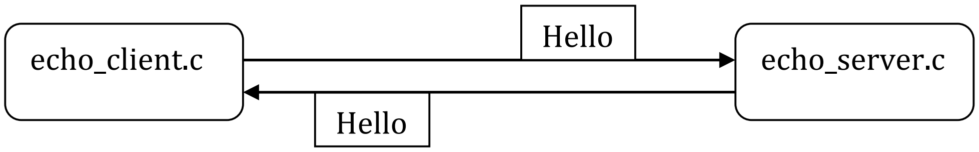
Task1: Echo Server (5 points)

- You will write a TCP/IP-socket based client-server program with C language.
- The server (**echo_server.c**) will **bind()** to an IP-address and a port number (localhost / 127.0.0.1 and port 8888) to **listen()** to client connection requests on this line and **accept()** connections.
- The client program (**echo_client.c**) will **connect()** to the echo_server (localhost:8888) to **send()** and **recv()** messages.
- The server will **recv()** text messages from the socket and send /echo/ **write()** them back to the client without any change.



HINT: Analyze these links.

Echo Server: http://www.binarytides.com/server-client-example-c-sockets-linux/

Chat Server: http://stackoverflow.com/questions/19349084/chatroom-in-c-socket-programming-in-linux

Task2: Call Center (15 points)

- Based on the echo client/server code above, **you will simulate** a Call Center, where up to 2 clients/customers can be simultaneously accepted by the Call Center **for echo or chatting (NOT real voice)**. You need to use **pthreads** for this.
- Each client has 10 seconds to Chat/Echo with the server, after which the server will close the client connection to accept new clients. You need to use a **timer** (gettime()? jiffy?) for 10 seconds.
- A 3rd client is also accepted (3rd thread), but not allowed to echo/chat until one of the two (2) clients finishes. This represents a call center wait queue **without** an actual queue data structure.
- If a 4th client arrives, when the server is busy serving 3 clients it is NOT accepted.
- As a bonus (optional), you can write a shell script to start clients periodically, to test the server.

VoIP phone
Call center server
Call center agent „A"
Call center agent „B"

SUBMISSION GUIDE:

TAR/ZIP all *.c *.h files, and Makefile into *hw3_First_Lastname.gz*

Make sure it compiles and runs when we gunzip/untar and type **"make"**.