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We followed the annocement and wrote the testcases for the functionality and wrote the testplan with the list of the commands.

Server and Client do not have command line argument for the port number, the client will require the IP address for the server, or use localhost

The client will actively search for remote connection every 3 seconds.

Wait a couple seconds for the prompt to print everything before issueing commands

The commands are for the bank server are open
start
credit
debit
balance
finish
exit

Always enter a space before entering the accountname for open and start and enter a space before entering the amount.

Only enter single names for the account name, but we can accept numerical names.

Starting with the server.c our print_server_status(int signum) will print the account names, balance, and print if the account is in session and if yes (do not print account balance). We mutex lock before we print to make sure no session will start or account balance will be altered.

Time complexity is 0(n) space complexity is 20n

sigint_handler(int signum) will set the semamphore status for the server to shut down.

shutdown_server(void* args) will check if the semaphore status is set to shutdown, if yes then it will join all threads, destroy the list/nodes for the account and free all threads.

Time complexity is 0(n) space complexity is 20n

start_comm(void* ThreadArgs) will create a list of accounts and socket descriptors. It'll write to socket any arguments to pass to the client. It contains the commands for account sessions, and exiting client sockets. Once closed socket, thread exits

The server main() function contains the signal handlers, mutex socket threads and creates the server sockets, it will also create a thread handler and pass them into a list. Server will print status of accounts every 20 seconds. The server port is 5455.We have the socket options REUSEADDR,LINGER,and TCP_NODELAY turned on.

The client.c will create write and read threads. It creates the client sockets, always searching for a server connection every 3 seconds. We have the socket options REUSEADDR,LINGER,and TCP_NODELAY turned on.