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**Programming Assignment 1: Online Cryptocurrency Trading**

**Prerequisites:**

1. The user must have the GCC compiler installed on their Unix-based system. The Makefile compiles both the server and client programs using GCC.
2. The user must also have downloaded and extracted the amalgamation for SQLite3 in the same directory with “server.c”, “client.c”, and “cis427\_crypto.sqlite”. This ensures that the programs can access sqlite3 libraries. Particularly, this includes “sqlite3.c” and “sqlite3.h” found in the latest SQLite3 amalgamation zip downloaded from <https://www.sqlite.org/download.html>. Put these files in the program directory.

**Compiling:**

1. To compile “server.c” and “client.c”, the user will have to open a terminal window in the directory of these files and the issue the “make” command. This will produce the executables for server and client. Wait about 30 seconds for the compiling to be done.

**Running Instructions:**

1. After the client and server programs are compiled, the user can now start them.
2. First, start the server using the command “./server”. This will start a server on the computer with the local IP address of the computer.
3. Next, start the client using the command “./client {address}”. In the address, you must specify the address of the server. For example, if you’re trying to run the client on the same computer as the server, you can use “./client 127.0.0.1” or “./client localhost”.
4. If done correctly, you should be able to enter things into the client with the server echoing received.

**Crypto Commands:**

1. “BUY”: Allows user to buy a cryptocurrency given that the user exists, and they have money.
   1. Example: “BUY DOGECOIN 1 2 1”

Buys DOGECOIN, 1 share at 2 dollars per share for user 1.

Output: “200 OK

BOUGHT: New balance 1.0 DOGECOIN USD balance $98.00”

1. “SELL”: Allows user to sell a cryptocurrency given that the user exists, and they have the necessary amount to sell in their account.
   1. Example: ”SELL DOGECOIN 1 1 1”

Sells DOGECOIN, 1 share for 1 dollar per share for user 1.

Output: “200 OK

SOLD: New balance: 0.0 DOGECOIN USD balance $99.00”

1. “LIST”: Allows user to list all cryptocurrency in the Cryptos table.
   1. Example: “LIST”

Lists all cryptocurrencies in the table.

Output: “200 OK

The list of records in the Crypto database for user 1:

1 DOGECOIN 1 1”

1. “BALANCE”: Allows the user to see the USD balance for user 1 in the table.
   1. Example: “BALANCE”

Shows the balance for user with user\_id of 1.

Output: “200 OK

Balance for user Greg Kosakowski: $99.00”

1. “SHUTDOWN”: Allows the user to close the server they are currently connected to.
   1. Example: “SHUTDOWN”

Closes the server down (closes the correct sockets and terminates server program.

Output: “200 OK

Shutting down server…”

1. “QUIT”: Allows the user to close the client that they have open locally.
   1. Example: “QUIT”

Closes the client down (closes the correct socket and terminates client program.

Output: “200 OK

Quitting client…”