

Computer Network Programming
CS5283

Programming Assignment-II

Due Date: 27th feb 2004.

Total: 30points.

As you all have done your first program successfully, let's make our program more interesting. This time you will be dealing with Multi client and Single server.

Recently you have been contacted by FoodMart superstore (they are in the business of groceries, vegetables etc.). They require you to write client, server programs that help them in billing at various terminals present in the store.

The server has access to a Database file called "**database.data**". The contents of the database are as follows (add at least 25 entries in your file).

Code	itemdescription	price (\$)
0001	Tyson chicken	0.99
0002	Coke Coal 2lt	0.88

Please adhere to the client and server description (customer requirement) as given below:

Server Description:

- Waits for a Client to connect.
- Requests for client to send password.
- If it doesn't receive the password in 20 sec then it will send a message to the client, to close the connection and terminates the client connection (**3 points**).
- Similarly if it receives an invalid password.
- Now the server waits for the client to send item code.
- It replies to client with the corresponding item description and price obtained from the database.
- If the item is not found in database appropriate message has to be sent.
- This is done until the client send a "halt" instruction.
- Then it closes the client socket.
- Use your creativity in coming up with a condition to close the server socket, because we don't want the resources wasted (this is not customer requirement). According to that condition close the server socket (**3 points**).

Client Description:

- Connect to the server.
- On receiving the request for password, ask the user to input password (cs5283).

- If it receives a service denied message then terminate else continue.
- Asks the user to input the item code (practically this is done using a bar code reader; here it is given by the user).
- Gets the price and item description information from the server and displays it on the screen.
- Then adds the price to the total price of items the user has requested.
- When the user gives done instruction (0000 as the item code). It sends a halt instruction to the server.
- Display all the items that were purchased by the user, along with their prices.
- Display the total price of all the items (**4 points**).
- Close the socket.

Note:

- Server will have the port number as a command line input.
- Client will have the server name (e.g. “a.cs.okstate.edu”) and port number as a command line input.
- This is a Multi client program, so it should be multi threaded. You can use fork and join for this. You will have multiple clients interacting with the server at the same time (**10 points**).
- Please mention your creative condition in the external documentation.
- You should carefully think about the possible error/exception conditions that may occur and give error/exception handlers for those.
- You will lose points (**1 point for each**) if your program has any bugs in it, as you are going to present it to the customer. So try to have all possible error/exception handlers.

Additional Instructions:

- The programs must have both Internal and External Documentation.
- The External documentation at the beginning of the program should have (**5 points**):
 - Your name and id.
 - The section you belong to (Stillwater, Tulsa etc).
 - Compile instructions for your program.
 - A small description of what the program does.
- Make sure you follow the specifications and give comments where ever you feel necessary (**5 points**).
- The programs will be tested only on the CS department servers and in the ms 222 lab, so see that your programs are not machine dependent. No points will be awarded if the programs are not compiled on the CSA (a.cs.okstate.edu) server.
- Use print statements to display on console, the events that are going behind the scene.
- Don't forget to **close the sockets**.
- If you're program doesn't compile then a maximum of **5 points** will be awarded.
- If you don't implement the multiple clients then a maximum of **8 points** will be awarded.

- Extra credit (**5 points**) will be awarded based on your creativity in providing additional features. Please explain about them in external documentation.
- Check course syllabus for information on late submission and plagiarism.
- Use handin to submit your database file and programs to **program2** directory in cs5283 class account.