

Jordan University of Science and Technology
Faculty of Computer Information Technology
Software Engineering Department
Client Server System (SE371)
Final Exam - January 27, 2021

Question one:

You are required to implement the following voting system. There are three candidates and 100 voters. The server maintains the count for the three candidates (1, 2, and 3). The voters are represented by clients who must vote for one of the candidates. The server maintains a count for each candidate. There are 100 voters in the system. Each voter is represented by a client. Each client votes for one of the three candidates randomly. The client makes the vote and terminates. The server must inform the client that the vote was accepted.

At the end of the voting process, the server must print the results in the following form

Candidate	Number of Votes
1	xx
2	yy
3	zz

**** You must use threads to implement the code.**

Question two:

You need to build a client-server system to be used in a grocery store. For now, we assume that the customers are expected to pick up their own products, Place them in a shopping cart, and bring them over to the cash register to finalize their purchase.

The cashier represents the clients and the main system represents the server.

The cashier must login to the system by entering the username and password then the server must authenticate the user (username and password are already stored in the server).

All grocery store products information has already been stored correctly on the server.

Name	Number	Unit		Price \$
		Count	KGM	
Shampoo	122	1		5.99
Tomato	123		1	0.89
Rice	124	1		3.99
Potato	125		1	.79
Sugar	126	1		2.99
Banana	127		1	0.99

The cashier then needs to enter the product number manually into the system. The cashier has the option to enter the count of multiple products. For the products that require weighting like vegetables and fruits, the cashier need to enter the weight. So the casher must enters the product number for the vegetable and fruit products (all items must be sent to the server to calculate). The bills should be updated on the screen with each product being entered.

The cashier can cancel any product already entered for any reason (by send the info to the server then server must cancel the product). Finally, the cashier tells the customer of the total amount to pay. The cashier then enters the total money given by the customer. As a result, the cash register drawer is opened, the customer change is displayed, and bill is printed on the client's screen.

The bill should contain the name of the store, date, time, products list, products weight, or count, total bill amount, customer total money, and customer change. For the store name use the following: SE_XXX, where XXX is your student ID.

Good Luck ^-^