

ITMD 512: Structured/Systems programming

Spring semester: Final project

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Purpose of the project

This is the final project of the Spring semester. This project is about developing a StockMarket program in C++ for the IIT Brokerage Company. The user must be able to connect to the application using a PIN number. Then the program consists of two services:

- **Buy stock:** The user wants to buy shares from a company. To do so, he has to enter the NYSE code of the company, the number of shares to purchase, the price of one share and the time of purchase. The program will then display the receipt of that action.
- **Sell stock:** The user wants to sell shares. To do so, he must enter the NYSE symbol of the stock, the number of shares to sell, the date of the transaction and the price to sell. The program then will display the receipt.

Moreover, all this information must be stored in a file which will represent all the transactions of the day.

Client contact

Name: IIT Brokerage Company

Address: 3300 So. Federal, Chicago, IL 60616

TOE Chart

Task	Object	Event
Connect to the program	connect_btn	Click
Buy shares	buying_btn	Click
Sell shares	selling_btn	Click
Enter the balance	balance_textBox	
Enter the stock Symbol	symbol_textBox	
Enter the number of shares	nbShares_textBox	
Enter the time to purchase/sell	Date_calendar	
Enter the purchase/selling price	price_textBox	
Calculate the total purchase/revenue price	calculate_btn	Click
Display the receipt date	receiptDate_textBox	
Display the receipt stock	receiptStock_textBox	
Display the receipt number of shares	receiptNbShares_textBox	
Display the receipt total price	receiptPrice_textBox	
Save The data into a file	calculate_btn	Click
Exit the program	exit_btn	Click

Graphical user interface



The image shows a graphical user interface for a 'Connect' window. It has a light gray background. At the top, the text 'Enter your PIN number to Connect' is centered. Below this text is a white rectangular input field for the PIN. To the right of the input field is a light gray button with the text 'Connect'. Below these elements, the text 'What do you want to do ?' is centered. Underneath this text are two light gray buttons: 'Buying' on the left and 'Selling' on the right.

Figure 1 Connect window

Buying shares

Balance

Stock Symbol

Number of shares to buy

Date of the purchase

April 16						
M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Price of ONE share

Figure 3 Buying shares

Buying receipt

Date of transaction

Stock purchased

Number of shares purchased

Total purchased price

Do you want to exit or to go back to the home page ?

Figure 4 Receipt of the purchase

Selling shares

Balance

Stock Symbol

Number of shares to sell

Date to sell

April 16						
M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Price of ONE share

Figure 5 Selling window

Selling receipt

Date of transaction

Stock sold

Number of shares sold

Total revenue price

Do you want to exit or to go back to the home page ?

Figure 6 Receipt of the selling

UML Diagrams

1. Class diagram

I programed all the application with a windows for application design. So here you can see the different forms (or layouts) that I implemented to build the program

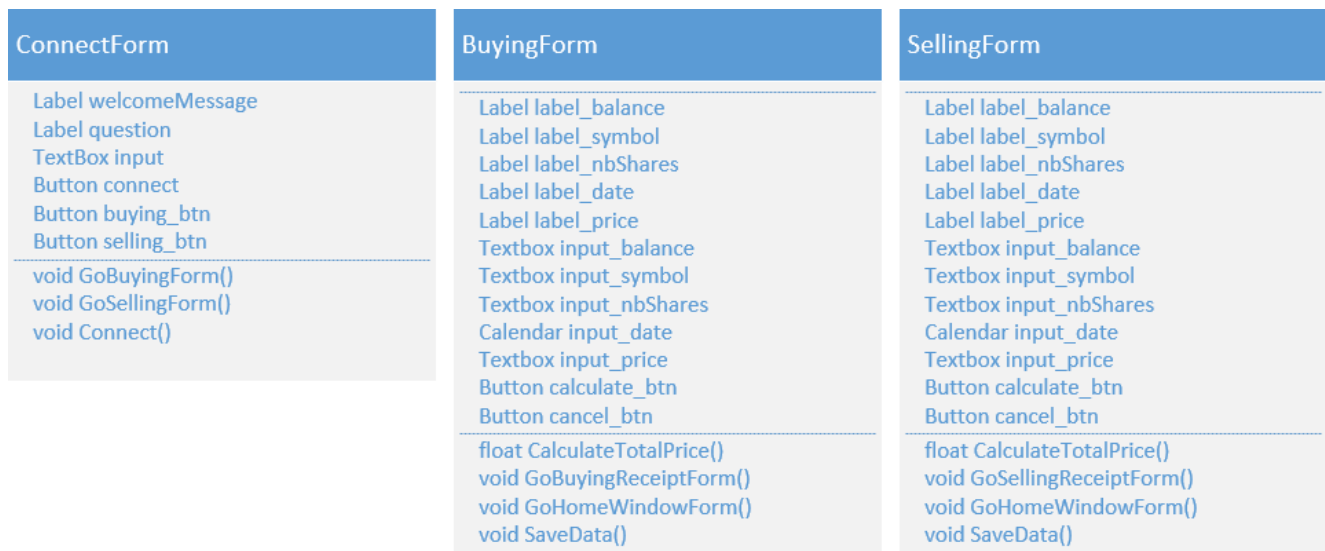


Figure 7 Class diagram part 1

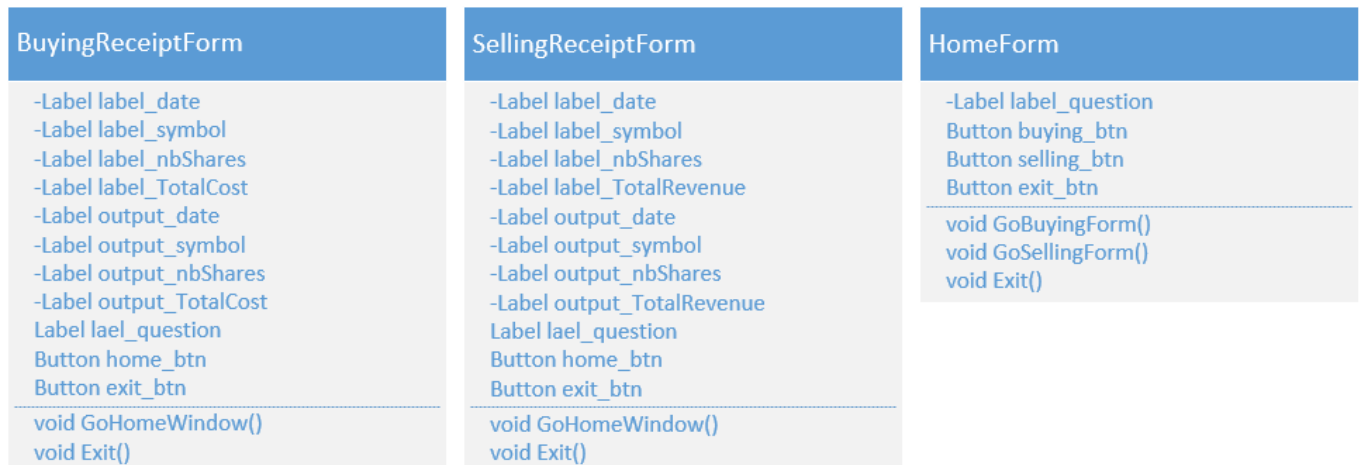


Figure 8 Class diagram part 2

2. State diagram

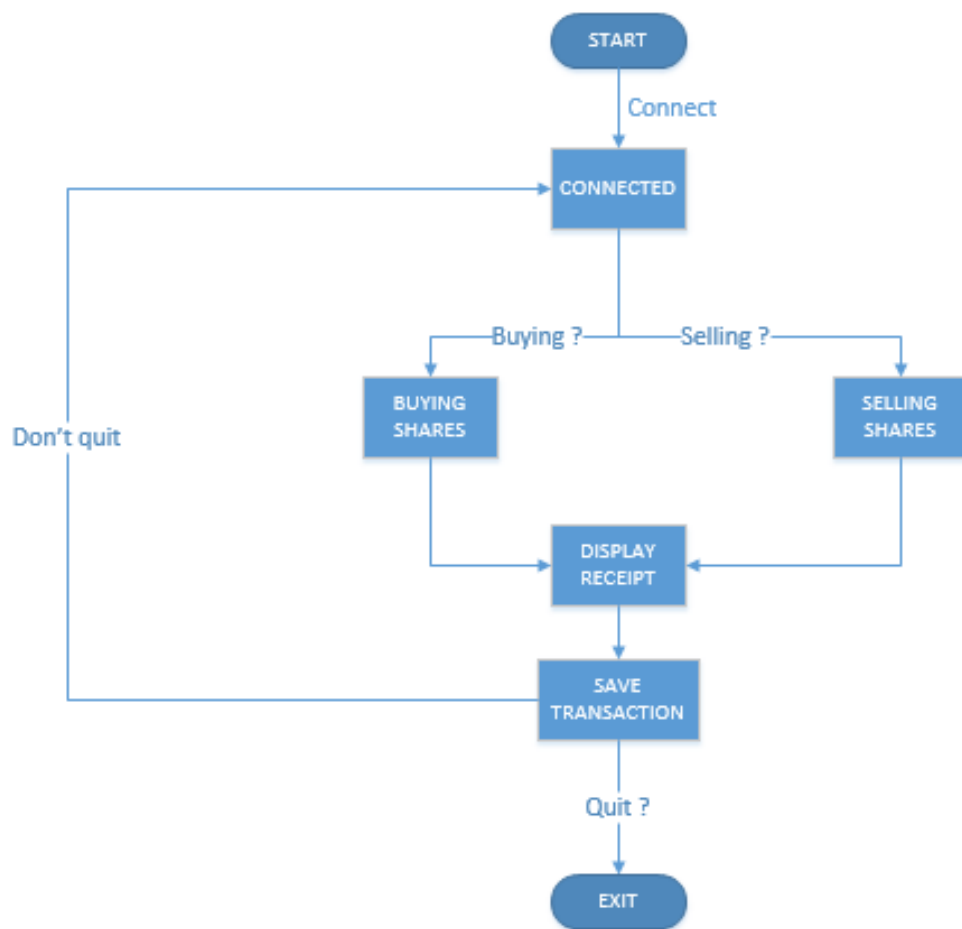


Figure 9 State Diagram

Flow chart

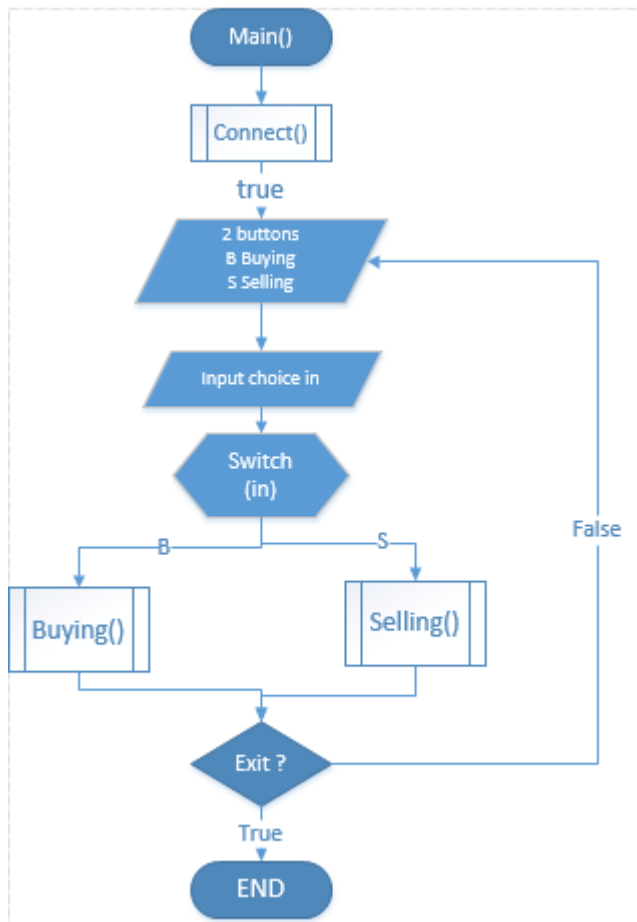


Figure 10 Main function

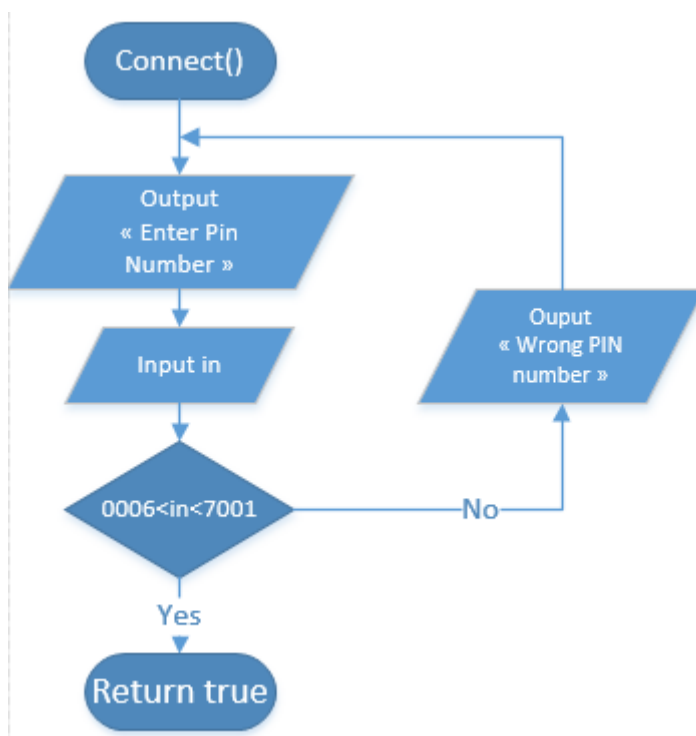


Figure 11 Connect function

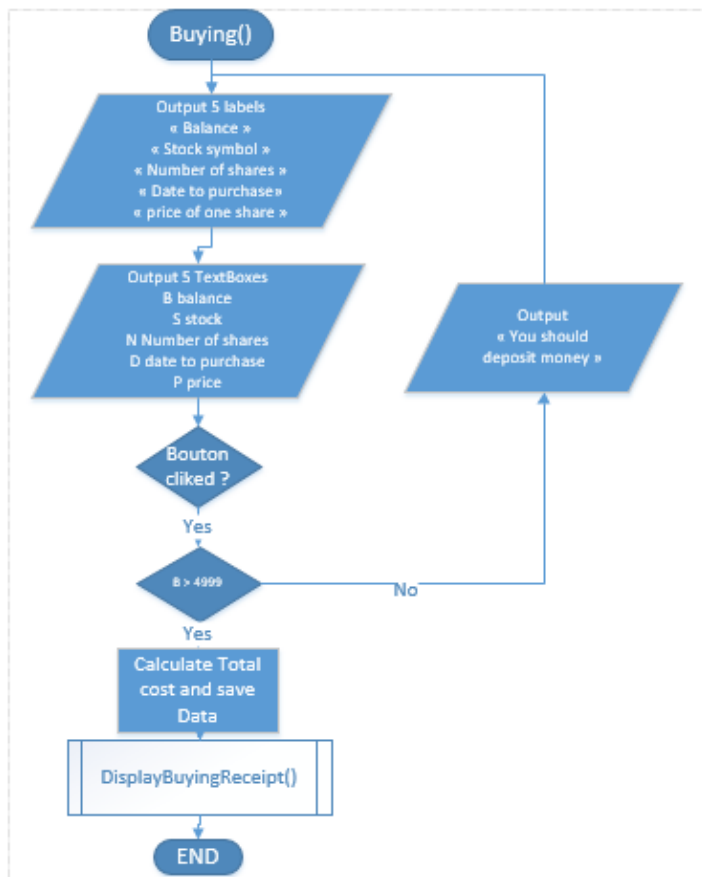


Figure 12 Buying function

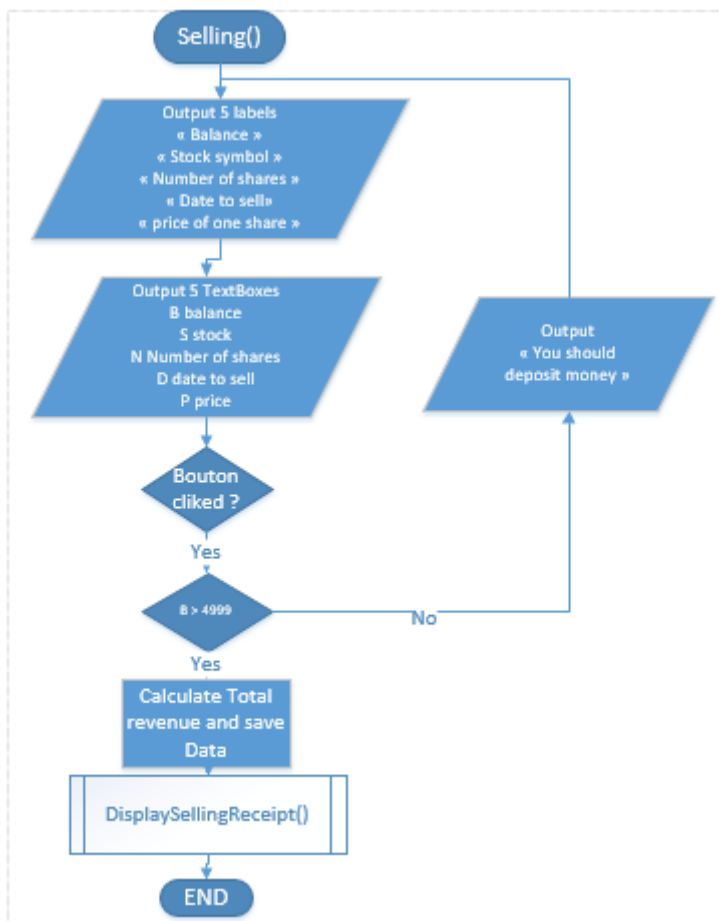


Figure 13 Selling function

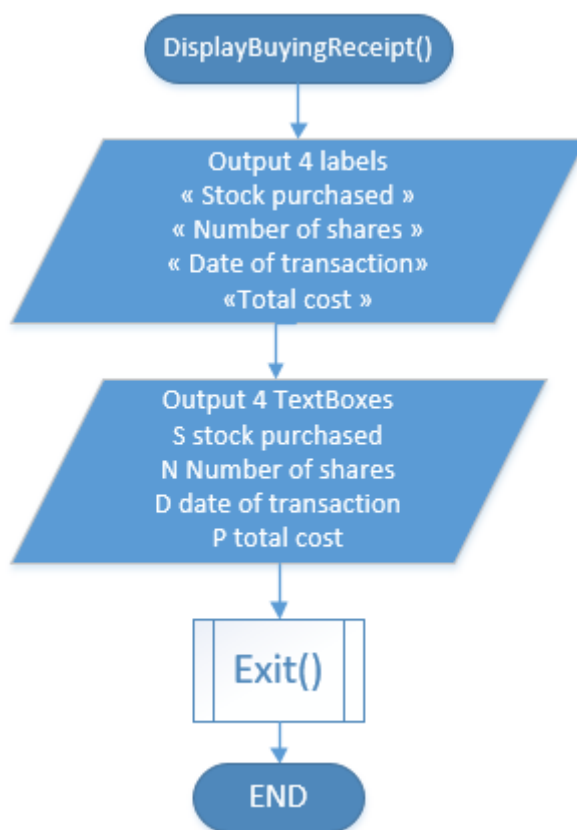


Figure 15 Display Buying receipt

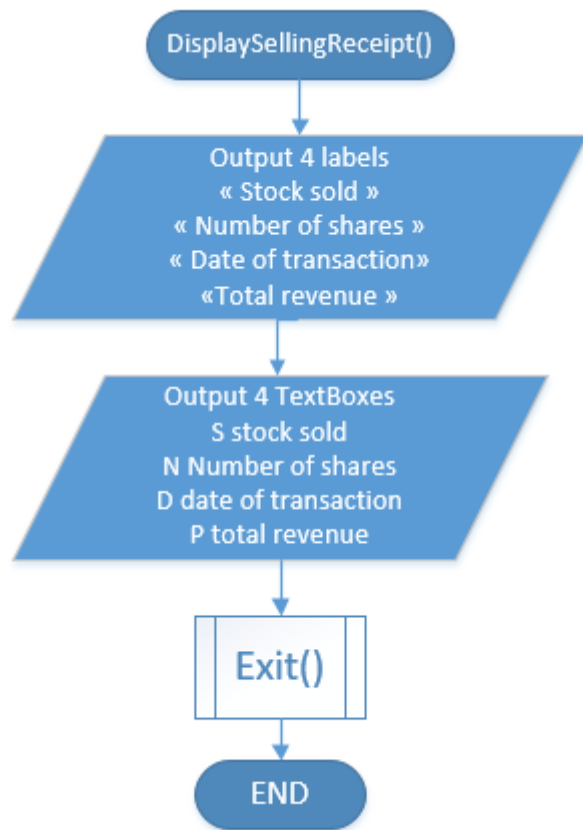


Figure 14 Display Selling receipt

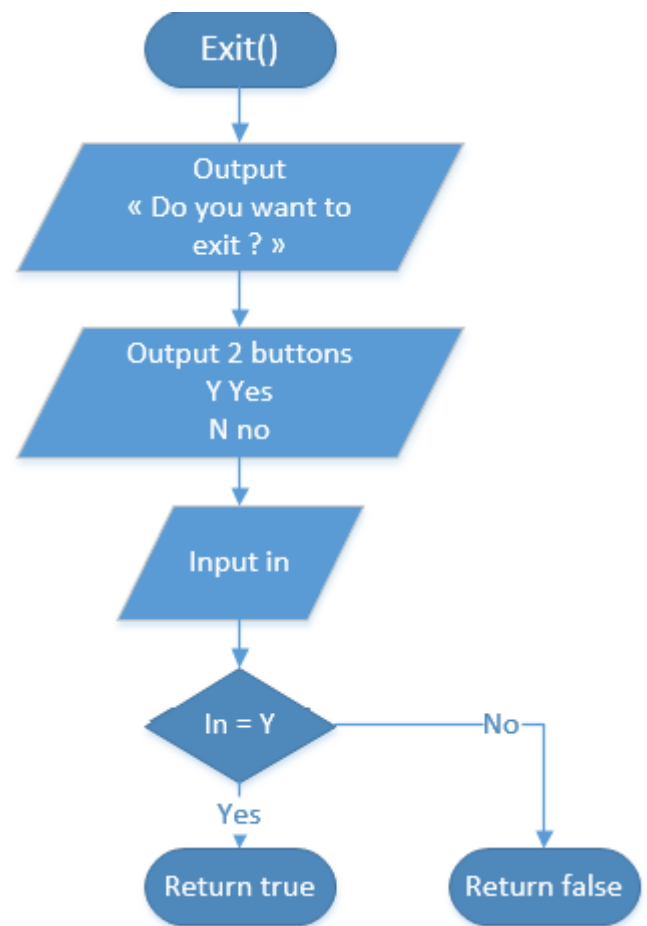


Figure 16 Exit function

Expected Results

Type	Stock Symbol	Number of shares	Price of 1 share	Cost/Revenue	Brokerage Fee	Total Cost/Total Revenue
Buying	Skyline Medical (SKLN)	150	176	26400	2640	29040
Selling	Activision Blizzard (ATVI)	113	254.5	28758.5	2875.85	25882.65

Snapshots

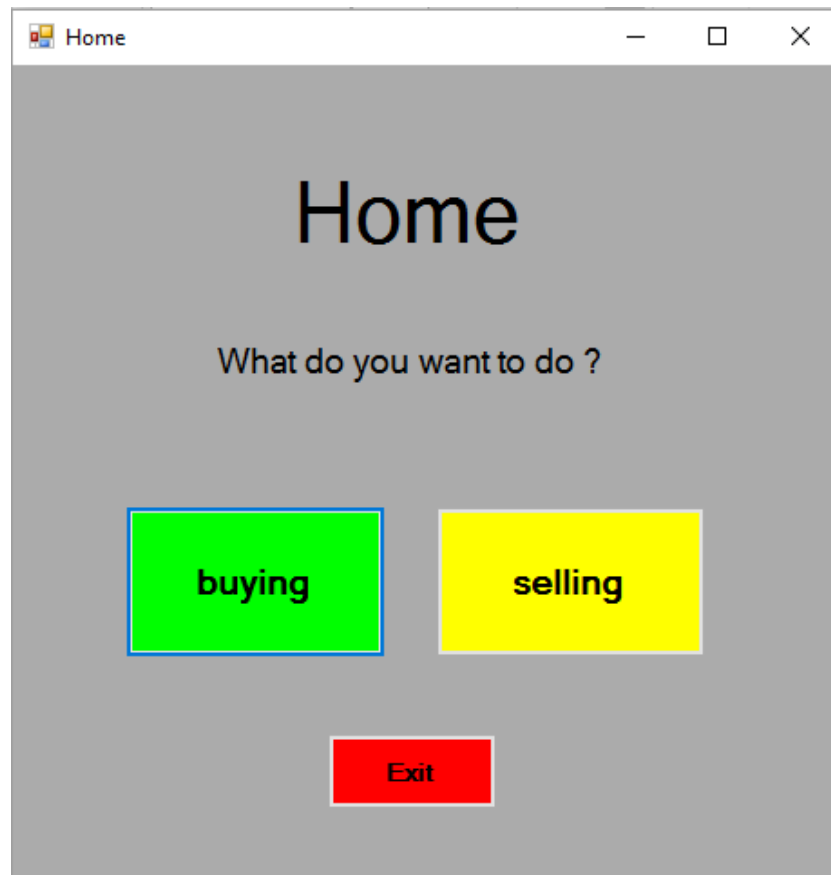


Figure 17 Home window

BuyingForm

Buying shares

Balance: 6500

Stock symbol: Skyline Medical (SKLN)

Number of shares to buy: 150

Date of the purchase: April 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7

Aujourd'hui : 4/15/2016

Price of ONE share: 176

Calculate **Cancel**

Figure 18 Buying shares

BuyingReceipt

Receipt of the buying

Date of transaction: Wed 20 Apr 2016

Stock purchased: Skyline Medical (SKLN)

Number of shares purchased: 150

Total purchased price: 29040 \$

Do you want to exit or to come back at the home window?

Home **Exit**

Figure 19 Buying receipt

SellingForm

Selling shares

Balance: 6850

Stock symbol: Activision Blizzard (ATVI)

Number of shares to sell: 113

Date to sell:

April 2016						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7

 Aujourd'hui : 4/15/2016

Price of ONE share: 254.5

Calculate **Cancel**

Figure 20 Selling shares

SellingReceipt

Receipt of the selling

Date of transaction: Sat 16 Apr 2016

Stock sold: Activision Blizzard (ATVI)

Number of shares sold: 113

Total revenue price: 25882.65 \$

Do you want to exit or to come back at the home window ?

Home **Exit**

Figure 21 Selling receipt


```
Program launched with the PIN number 25 on 4/15/2016 8:42:20 PM
```

```
Type of transaction: Buying  
Balance: 6500 $  
Date of the purchase: Wed 20 Apr 2016  
Stock symbol: Skyline Medical (SKLN)  
Number of shares purchased: 150  
Price by unit: 176 $  
Total price of the purchase: 29040 $  
-----  
Type of transaction: Selling  
Balance: 6850 $  
Date of the selling: Sat 16 Apr 2016  
Stock symbol: Activision Blizzard (ATVI)  
Number of shares sold: 113  
Price by unit: 254.5 $  
Total revenue: 25882.7 $  
-----
```

Figure 22 Log file