CSC 330 Spring 2019

Professor: Natacha Gueorguieva

Name: Syed Raza

Partner: Ahmed khodir

Assignment Date: 04/18/2019

Project # 01 (C++)

Phase # ReadMe Key (Total Pages 25)

Project Title*: Point of Sale's (POS) readme key. In this report you would get to know or would learn how to use the software for each and every section/function available in this software along with output samples. This report also has answers to the following questions

What challenges and what you have done differently if you could do it again?

What problems you had with your project?

Point of Sale (POS)

This software helps a supermarket or a grocery store to improve their data base either they want to keep the record of their employees, Loyal customers or theirs items at the store. This software provides an opportunity to add, remove, view and search in each of categories. This system file could take any text file as database if those file are formatted in a specific way as each of the category of program has different attributes.

Furthermore, it gives the user opportunity to check out a customer in which it prints quantity of each item, name of the item, unit price and total for one item and at the end it prints the total count of items with grand total.

Getting Started

Getting starting with this software is as easy as "1, 2, 3" It is very easy to perform tasks using this software.

These instructions will get you a copy of the project up and running on your local machine for development and testing purposes. See deployment for notes on how to deploy the project on a live system.

Prerequisites

What things you need to install the software and how to install them

There are no specifically any pre requisites other than just having a windows computer and being able to use the software on it.

Installing

The user will be provided by the exe file and by double clicking the user can always run the software and be able to functions if they may need to run.

Running the tests

In this section we are going to demonstrate the real

Break down into end to end tests

This section is very important for the program as we would learn how to use POS from end to end.

Main Menu:

```
1> Administrator
2> Cashier
0> EXit
your selection:
```

This is how the main menu looks like. This software allows different users with different privileges to use. For instance selection 1 allows an administrator whereas selection two allows a cashier/ other use with limited privileges.

Next step is selection/input

```
1> Administrator
2> Cashier
0> EXit
your selection: 1
```

So this selection would take the user to the administrator menu. This would take us to the options available in the menu as shown in the output box.

```
------: Main Menu : ----
1) Check out
2) Customer Menu
3) Item Menu
4) Employee Menu
5) EXIT
```

Here user is being asked to make a selection. Let's assume the user enters "1".

```
----: Check out Menu :----
Please enter an Item's ID :
```

As soon user enters "1" it would ask user to enter the item id which would be search and if exists would be printed on the screen as shown below. Key to remember, all item's id always start with "i" no capital letters.

```
----: Check out Menu :----
Please enter an Item's ID : i002
```

Once the item is found it would print item's Id, Name and unit price. It would also show an option if the user would like to add another item to the cart. Key point, the option would only take "y" to continue and any key to exit.

```
1    Bread        X 5.49

to continue press y/n :
```

If user pressed the "y" does not matter if it is capital/ small letter is pressed.

```
to continue press y/n : Y
```

```
to continue press y/n : y
```

But as soon user entered any other key it would take us to next step. Now, user would be asked a question whether or not customer is a loyal, as shown in the output.

```
to continue press y/n : u
Does the customer has an ID?? y/n :
```

If you have a customer who is already registered it would ask to enter an id. If the customer is registered then you would press "y" or any key if they are not registered.

```
Does the customer has an ID?? y/n : y
```

```
Does the customer has an ID?? y/n : n
```

If option pressed "y" it would ask for Id of customer. Here, Key to remember is all customer id starts with "c" not caps.   As soon users enters the id

```
Does the customer has an ID?? y/n : y
Please enter ID : c002
```

It prints the receipt where it shows how much a customer has to pay while printing the name of store, address, current date and with a message that the customer's spending has been modified and updated in the data base of the system.

```
                    !!The Virtual Systems!!
               2800 Victory BLVD Staten Island 10314
                 Date: 4/17/2019 Time: 9:55:13


Quantity Item Name       Unit Price        Total
  1     Bread              x$5.49          $5.49








     Total Amount due is: $5.49
                      Thank you for shopping!!!








Successfully added for Reward Points
```

Let's assume that the customer was not one of registered customer so now they would press any key as shown where I pressed "n" as shown below

```
Does the customer has an ID?? y/n : n
```

It would print the receipt and it would still allow the user to check out.

```
                    !!The Virtual Systems!!
               2800 Victory BLVD Staten Island 10314
                 Date: 4/17/2019 Time: 10:17:44


Quantity Item Name       Unit Price        Total
  1     Bread              x$5.49          $5.49



     Total Amount due is: $5.49
     Thank you for shopping!!!
```

Now, going back to the main menu which is option "2" .it would appear if user presses 2. Now "Customer Menu" would pop up a sub menu. Menu, allows the user to add a customer's info to have them in the loyalty program enrolled. This menu has a sub menu as shown below.

```
------: Customer Menu :-----

1> Add New Customer
2> Remove a Customer
3> edit custmoer
4> lookup spending
5> Search a Customer
6> View all Registered Customer
0>        ExIT
```

In this menu they are being given an option to add a new customer, remove a customer, edit a customer's information, lookup spending, search a customer or view a list of all customers (registered) and at last they are given an opportunity to EXIT the menu.

Now we are going to take a step back and look at each of these methods and learn how to easily add customer.

Step 1: To add customer the user must press "1"

Step 2: Enter the customer id

Step 3: Enter Customer's Name

Step 4: Enter Customer's Address

Step 5: Enter Customer's Phone number

Step 6: Enter Customer's Spending. (Mostly "0.00")

Sample output for adding customer

Data base before adding the customer

```
1    c001;syed; 1234 Brooklyn Ave; 718123456;0;
2    c002;JOhn Stit;8650 your street ; (647) 917-9982;101.57;
3    c003;Manal;joy Street ;(987) 666-0091;31.08;
4    c004;asli;2800 forrest street si ;(876) 567-9878;1.09;
```

Now we would like to add a customer by just following the steps we just talked about

```
1
Id :c006
Name :Anthony
Address :28 Java Street
Phone :(718) 982-2727
Spending :0.00
```

Once you are done with adding customer it would as if to continue adding press "y" or any key to exit.

Now at this point we want to check our data base to make sure it was correctly added in our data base.

```
to continue press y/n : y
```

```
to continue press y/n : Y
```

```
c001;syed; 1234 Brooklyn Ave; 718123456;0;
c002;JOhn Stit;8650 your street ; (647) 917-9982;101.57;
c003;Manal;joy Street ;(987) 666-0091;31.08;
c004;asli;2800 forrest street si ;(876) 567-9878;1.09;
c006;Anthony;28 Java Street ;(718) 982-2727;0;
```

As it can be seen at the end of the list contact with ID "c006" one we added & highlighted is in the list which shows it is successfully added.

For option "2" from the Customer Menu:

If user presses "n" it would take them to main menu where they can make their selection again. Let's assume the user wanted to remove a customer where the software would pop up a menu to enter an ID of a customer and if found and successfully removed

```
------: Customer Menu :-----

1> Add New Customer
2> Remove a Customer
3> edit custmoer
4> lookup spending
5> Search a Customer
6> View all Registered Customer
0>      ExIT
2
Please enter an Item's Id to remove:c006

Found & Able to delete
```

As shown in the output we tried to delete the same customer one we just added into our data base and if was found and removed successfully. One more time we want to check in our data base to make sure it is removed from the list as well.

Here is the out the file and we are missing the customer with ID "c006" in our data base as we were supposed to.

Now we are up to option "3" in the customer menu we simply press "3" and we are given

As soon we press the option 3 the user will be asked to enter an id of customer you want to "Edit". Just a reminder, a customer ID always starts with a letter "c" and no caps. We can choose any id from id's available in the data base in this option the customer must exist or you will be Exit from the menu. For instance, below is the list available as of now. And we choose contact with id "c003."

Pay close attention before editing information and now we will post edited information.

```
please enter a Customer's ID :c003

Id :c003
Name :Ahmed Khodir
Address :987 Forrest hills ave Staten Island 10314
Phone :(917) 000-2314
Spending :31.0
```

You will be printed a confirmation saying "Successfully Edited"

Now we would like to check same way if it has been updated in our data base.

```
n.cpp        Item.h        Cart.h        storeInvetory.txt        storeEmployee.txt
1    c001;syed; 1234 Brooklyn Ave; 718123456;0;
2    c002;JOhn Stit;8650 your street ; (647) 917-9982;101.57;
3    c003;Ahmed Khodir;987 Forrest hills ave Staten Island 10314;(917) 000-2314;31;
4    c004;asli;2800 forrest street si ;(876) 567-9878;1.09;
```

As it can be seen it was successfully added

Option "4" where user gets an option to check customer's Spending.

Step 1: press "4" to access the Spending Menu

Step 2: Now enter an ID while making sure the ID is starting with letter "c".

Step 3: you would see on screen printing customer's Name and how much they have spend until the current time and date.

```
------: Customer Menu :-----

1> Add New Customer
2> Remove a Customer
3> edit custmoer
4> lookup spending
5> Search a Customer
6> View all Registered Customer
0>      ExIT
4
Please enter the Customer's id:
```

The output would be similar to this, shown below

```
4
Please enter the Customer's id: c003

 The Customer "Ahmed Khodir "'s spendings = $31
```

Option "5": Allows users to Search a customer.

Step 1: press "5" to access the Spending Menu

Step 2: Now enter an ID while making sure the ID is starting with letter "c".

Step 3: you would see on screen printing customer's information if found or a message saying they do not exist in the system

```
------: Customer Menu :-----

1> Add New Customer
2> Remove a Customer
3> edit custmoer
4> lookup spending
5> Search a Customer
6> View all Registered Customer
0>       ExIT
5
please enter a Customer's ID :
```

Once user enters the choice "5" it would ask them to enter the customer ID as shown as soon I entered the ID it showed me the customer's available information

```
5
please enter a Customer's ID :c003

Contact does Exists
ID :c003
Name: Ahmed Khodir
Address: 987 Forrest hills ave Staten Island 10314
Phone: (917) 000-2314
Spending: $31
```

Similarly let's assume the customer do not exists in the data base then you would see similar to this output which shown below.

```
------: Customer Menu :-----

1> Add New Customer
2> Remove a Customer
3> edit custmoer
4> lookup spending
5> Search a Customer
6> View all Registered Customer
0>        ExIT
5
please enter a Customer's ID :c009

Contact does not Exists
```

After this it would the user to the main menu. Let's assume once again that the user wants to see all the registered customer's list available in the data base.

For this user would have to be in the sub menu of customer and must press "6" to view the list.

 User will be looking at a screen similar to this

```
------: Customer Menu :-----

1> Add New Customer
2> Remove a Customer
3> edit custmoer
4> lookup spending
5> Search a Customer
6> View all Registered Customer
0>        ExIT
6
ID :c001
Name: syed
Address:  1234 Brooklyn Ave
Phone:  718123456
Spending: $0

ID :c002
Name: JOhn Stit
Address: 8650 your street
Phone:  (647) 917-9982
Spending: $101.57
```

Now we have successfully done each and every task and would like to exit from customer and go to main menu.

Only Step to be taken: press any key to exit

Item Menu:

Now what if the user presses "3" option key from key board which would take user to sub "Item" menu.

```
------: Item Menu :-----

1> add an Item
2> Edit an item
3> remove an item
4> price of an Item
5> search an Item; if exists
6> view available Items
0> Exit
```

In this menu user if offered to add an Item, Edit an Item, Remove an Item, checking selling price of an Item, searching an item and available list of all the items from the data base and at end if the user want to EXIT

Option "1" to add an Item to the data base

Step 1: press "1" to access the add menu

Step 2: Enter an Item's id

Step 3: Enter an Item's Name

Step 3: Enter an Item's Cost price

Step 4: Enter an Item's Sell price

Step 5: Enter an Item's Quantity

```
0> Exit
1
Id :i009
Name :Orange
Cost :2.99
Sell :3.49
Quantity :2
```

```
1
Id :i009
Name :Orange
Cost :2.99
Sell :3.49
Quantity :2

Success with adding Item !!
```

After entering data this is how it would look as shown above. After this as we did in customer menu make sure it has been added in our data base

Option "2" Edit an Item which is already in the data base

Step 1: press "2" to access the Edit menu

Step 2: Enter an Item's id (starting with "i")

Step 3: enter the info of the item

Step 4: look for an output and also check in data base if the info has been updated

Here is the sample output

```
Id :i009
Name :soda
Cost :2.49
Sell :3.99
Quantity :1

Succesfully Edited the Item
```

In the event when entered item is not available in the system & user and trying to Edit it.

```
------: Item Menu :-----

1> add an Item
2> Edit an item
3> remove an item
4> price of an Item
5> search an Item; if exists
6> view available Items
0> Exit
2
please enter an Item's ID :i007

Item does not exist in the System
```

Now we have got to the option "3" where user is given an opportunity to remove an item from the data base that must be in the system in order to be able to delete.

To delete an Item

Step 1: simply press "3" to get to remove item option in the menu of Item

Step 2: Enter an Item's ID (starting with "i")

If found, it would delete or if not found would display a message as shown below

If item found:

```
------: Item Menu :-----

1> add an Item
2> Edit an item
3> remove an item
4> price of an Item
5> search an Item; if exists
6> view available Items
0> Exit
3
Please enter an Item's Id to remove:i009
ID: i009
Name : soda
Cost Price: $2.49
Sale Price :$3.99
Quantity: 1


Found the Item and able to delete
```

If item is not found:

```
3
Please enter an Item's Id to remove:i009
Item was not Found
```

Checking the price:

Option 4: using this option the administrator can access the item's info along with sale price printed as well

Step 1: just press "4" in the item's menu and it would take the user to price menu

Step 2: now enter an Item's id (starting with "i")

Step 3: you will be shown the price if item existed, otherwise it would print a message that the item you are trying to access does not exist.

```
------: Item Menu :------

1> add an Item
2> Edit an item
3> remove an item
4> price of an Item
5> search an Item; if exists
6> view available Items
0> Exit
4
please Enter the Item's ID to check the Price :i003
ID: i003
Name : sugar
Cost Price: $1.1
Sale Price :$5.99
Quantity: 15


The Price of "sugar" is : $5.99
```

Searching an Item:

In this option user is given an opportunity to search for an existing Item. It would print the item's available info and print a message that Item does exists.

To search an item, follow these steps

Step 1: Press "5" to access the search Option in the Item menu.

Step 2: Enter an Item's ID

Step 3:if item existed it would print similar output as shown below or it would say the Item does not exists.

```
------: Item Menu :-----

1> add an Item
2> Edit an item
3> remove an item
4> price of an Item
5> search an Item; if exists
6> view available Items
0> Exit
5
please enter an Item :i003
ID: i003
Name : sugar
Cost Price: $1.1
Sale Price :$5.99
Quantity: 15


Item does Exists
```

Viewing the entire Item's list:

In this menu user is able to view all the items available in the data base

To access all the items please follow these steps

Step 1: in the Item menu Press "6" and that would show all the items available

Here is a sample output

```
ID: i001
Name : milk
Cost Price: $2.1
Sale Price :$2.99
Quantity: 13

ID: i002
Name : Bread
Cost Price: $4.99
Sale Price :$5.49
Quantity: 6

ID: i003
Name : sugar
Cost Price: $1.1
Sale Price :$5.99
Quantity: 15

ID: i004
Name : Grape
Cost Price: $0.49
Sale Price :$1.09
Quantity: 10
```

EXIT:

This menu would get user to exit the sub menu. To exit simply from the sub menu press "0" that would exit the program for user.

End of Item Menu..!!

Employee Menu

If the user has made the selection of administrator by pressing "1", then Employee Menu by pressing "4" so It would bring us to something similar to the output shown below.

```
1> Administrator
2> Cashier
0> EXit
your selection: 1

------: Main Menu : ----
1) Check out
2) Customer Menu
3) Item Menu
4) Employee Menu
5) EXIT
4

------: Employee Menu :-----

1> Add an Employee
2> Remove an Employee
3> Search an Employee
5> Edit Employee info
4> View the Employee List
0> Main Menu
```

 For employee sub menu please follow these steps

Adding an Employee: To add an Employee from the sub menu follow these steps

Step 1: press "1" to access the add menu

Step 2: Enter the Employee's id

Step 3: Enter the Employee's Name

Step 3: Enter the Employee's Address

Step 4: Enter the Employee's Phone

Step 5: Enter the Employee's Social Security

Step 6: Enter the Employee's Salary

Sample input:

```
------: Employee Menu :-----

1> Add an Employee
2> Remove an Employee
3> Search an Employee
5> Edit Employee info
4> View the Employee List
0> Main Menu
1
Id :e008
Name :Ola Taha
Address :987 john street
Phone :(987) 000-2353
Social Security :199-02-9867
Salary :25000
```

Removing an Employee:

To remove an Employee Please follow these steps

Step 1: to access removing an item Menu please press "2"

Step 2: Enter the ID of the Employee (starting with "e")

Step 3: if found it would remove otherwise would print a message saying Employee does not exist in the data base.

Sample output:

```
------: Employee Menu :-----

1> Add an Employee
2> Remove an Employee
3> Search an Employee
5> Edit Employee info
4> View the Employee List
0> Main Menu
2
Please enter an Employee's Id to remove:e008

Employee removed Successfully
```

Search an Employee:

Please follow the steps to access the search an Employee in the Employee Menu

Step 1: user must press "3" from the keyboard in order to access the search menu

Step 2: Enter the Employee's id (starting with "e")

Step 3: if the Employee exists it would print their info otherwise it would say Employee does not exist in the data base. Sample output is given below

```
3
please enter an Employee's ID :e008

The Employee does exist in the list..!!
ID :e008
Name: Ola Taha
Address: 987 john street
Phone: (987) 000-2353
Social: 199-02-9867
Salary:  $25000
```

Edit an Employee's Info:

Please follow the steps to access to Edit an Employee who is already in data base. If the Employee does not exist the system will exit the menu

Step 1: user must press "5" from the keyboard in order to access the Edit menu

Step 2: Enter the Employee's id (starting with "e")

Step 3: if the Employee exists it would prompt the user to enter the information to edit an Employee as shown below with the output screen shot.

```
5
please enter a Employee's ID :e008

Id :e008
Name :Karolina
Address :987 john street
Phone :(917) 666-0958
Social Security :001-101-0101
Salary :80000

Successfully Edited
```

If the Employee does not exist it would exit the user from the software.

View Employees:

To access this menu from the Employee sub menu the user must enter "4" from the key board and it will print all the employees from the database as shown in the output below

```
------: Employee Menu :-----

1> Add an Employee
2> Remove an Employee
3> Search an Employee
5> Edit Employee info
4> View the Employee List
0> Main Menu
4
ID :e001
Name: Syed Raza
Address: 2236 Rayburn House Office Building
Phone: (917) 536-5054
Social: 100-00-0000
Salary:  $25000

ID :e002
Name: Mr. Jo Bonner
Address: 2236 Rayburn House Office Building
Phone: (334) 690-2811
Social: 100-00-0011
Salary:  $250450
```

End of the Employee Menu…!!!

Let's assume if the user presses "5" from the main menu they would be exited from the program which would bring the end of the administrator's menu

Cashier Menu:

Now I would like to take user through the Cashier Menu to get them familiar with it. This menu is as is the administrator however it is limited access. Cahier menu only have access to

```
1> Administrator
2> Cashier
0> EXit
your selection: 2

------: Main Menu : ----
1) Check out
2) Item Menu
3) Loyal Customer Menu
0 for Exit
```

In the cashier menu the check out is the same as the administrator. If the user would like to see how to check out a customer please go back and look at the checkout menu in administrator portion. Let's assume that the user want to access Item menu, using cashier login. They would see the same menu as administrator however they have limited access some of the option are not available to them.

Option 1: Adding an Item same as you ad items as an administrator.

Option 2: Editing an Item, not allowed since only allowed to Administrator.

```
------: Item Menu :-----

1> add an Item
2> Edit an item
3> remove an item
4> price of an Item
5> search an Item; if exists
6> view available Items
0> Exit
2

Option not available, ask your Manager
```

Option 3: removing an Item, not allowed since only allowed to Administrator.

```
------: Item Menu :-----

1> add an Item
2> Edit an item
3> remove an item
4> price of an Item
5> search an Item; if exists
6> view available Items
0> Exit
3

Please ask the floor Manager
```

Option 4: checking price of an Item is allowed as Administrator

If you would like to know steps please follow the steps mention in administrator section

Option 5: Searching an Item same as Administrator

If you would like to know steps please follow the steps mention in administrator section

Option 6: Viewing the Item's List, not allowed since it is only allowed to Administrator.

```
6> View all Registered Customer
0>      ExIT
6

Option is not available
```

Let's assume if the user presses "0" from the main menu they would be exited from the program.

Customer Menu (Cashier)

To access this menu user must enter "3" it would display a menu as shown below

```
------: Main Menu : ----
1) Check out
2) Item Menu
3) Loyal Customer Menu
0 for Exit
3

------: Customer Menu :-----

1> Add New Customer
2> Remove a Customer
3> edit custmoer
4> lookup spending
5> Search a Customer
6> View all Registered Customer
0>       ExIT
```

Option 1: Adding a Customer same as you ad customer as an administrator.

Option 2: Removing a Customer is not allowed to a cashier since only allowed to Administrator.

```
2

Not an authorized user
```

Option 3: Editing a customer is same as doing in the administrator's account.

If you would like to know steps please follow the steps mention in administrator section

Option 4: checking spending of a customer it would show customer's name and spending they have so far. If you would like to know steps please follow the steps mention in administrator section.

```
4
Please enter the Customer's id: c003

 The Customer "Ahmed Khodir "'s spendings = $31
```

Option 5: Searching an Item same as Administrator

If you would like to know steps please follow the steps mention in administrator section

Option 6: Viewing the Customer's List, not allowed since it is only allowed to Administrator.

```
6> View all Registered Customer
0>       ExIT
6

Option is not available
```

At the end if the user enter "0" to the menu choice this would make the user exit from the software. That brings the testing phase to end.

What problems you had with your project?

There has been a list of problem while working on this project. Initially we had issue with reading a text file in a proper. Initially we were reading the file in the main however my partner I agreed to not read in the main as it did not look too efficient and made it look like these text files did not belong to the main since they were being read. So we moved Iinvetory.txt to ItemTable class which is basically holding all the function for item class and we read the file in the ItemTable constructor. Similarly we read storeCutomer.txt and storeEmployee to their relative Classes which are Customertable and Employee Table respectively.

Then we ran into an error which was not common. We happened to include a header which was included in other classes it took us about 4-6 hours to figure that error since we had to go through each and every class to find the error. In visual studio the error was not clearly stated so we had to search on our own to figure out the error. This error happened when we were trying to collaborate and update our code between the partners since we divided and the portions and decided to put it together.

Another problem we ran into was the Employee class since it was reading double, strings. When we read the file it was not properly printing and when we debug through the code we figure out that it was reading.

Furthermore, one of many problems we ran into was in the cart class where we were trying to search a customer for loyal program in that part our program was crashing and it would not update customer's spending.

We also ran into an issue to write to file whether it was editing or it was removing from file. It was removing from vector however it was not updating the text file specifically in the Employee class.

What challenges and what you have done differently if you could do it again?

The very first challenge we ran into was making some time available when we both in the team were available. It took us about a week before we finally met for basic discussion. Next step was to finally agree on what we were doing in this project and how to collaborate on project.

The next challenge was how to connect data base for our POS as that was one of the hardest job to do. Specifically be able to. Coding in C++ and using SQL is not an easy task moreover when you are not familiar with it and have never use it before. So we agrees to text file with a specific format. Now at this point any file with specific format could be read and used for our program.

One of the challenges was the design or the UML diagram to finalize which function or method would go where & how would we access between the classes. Along with what data structure should we use because we didn't know how many items/customers/employee user would have. We didn't want to have extra memory allocated or static memory.

If we were able to redo this project we would have done a lot of things differently. Definitely, I would use C# to code this project as it would be a lot easier with database and having done the GUI would help not just improve our code and more importantly we would have less messy and less code than now. At the end we don't have to have this many classes as we have about approximately ten classes as of right now.