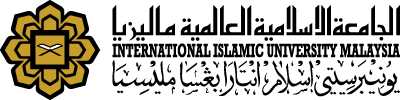
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**ELEMENTS OF PROGRAMMING**

**Automatic Vending Machine (Hot & Cold Drinks)Algorithm**

**&**

**Flowchart**

**Group members: Al-Sufi**

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**Introduction:** Assalamu Alaikum. Our **Al-Sufi Vending** machine is containing two sections, manger Section; to refill the machine, and collect the money. Customer section; to purchase Drinks, choice of payment (notes/coins), if the user doesn’t have enough money to buy similar cans, the user will be given a choice to buy different can with remaining balance.

The manager section we have **used 15 Functions** with private and public class.

The customer section has **21 Functions** again with public and private class.

The customer first need to insert money , check their balance and then buy their drinks. They can also get receipt( because we used files here)

The manager can see the purchase **history(files**),refill the machine and collect their salary.

**Input:**

* *Int moneyNotes.*
* *Float moneyCoins.*
* *Char Choice.*

**Output:**

* Float balance.
* Int numOfCans.
* String typesOfCans.

**Flow Chart:**

Start

OpeningTheProgram ()

Instructions ()

Print “Welcome to Al-Sufi vending machine”

Print “Instructions”

Print “1- Manager”

Print “You can collect your salary with any amount you want but not exceed the amount in the Account.”

Print “You can Refill this Vending machine with any amount from 1 - 20 Cans.”

You can check how many Cans has been sold.”

Print “You have to login to your account using your username and password.”

Print “Username should make sure that the Capitalization is right.”

Print “Password should contain 6 digits.”

Print “2- Customer:”

Print “You can buy Cans with any amount you want but not exceed 20 Cans.”

Print “If you don't have enough money you can left any type of can and take another.”

Print “You can insert money either coins or notes.”

Print “Once you finish your transactions Please check your Balance.”

Print “3- Both Manager and Customers:”

Print “Please choose only the transaction that already displayed because the program will close automatically after 10 Wrong inputs”

Print “Use the machine as

1-Manager

2-Customer”

Enter Choice

If Choice

Choice = 2 Choice = 1

ManagerClass::Get ManagerDetails()

UserName is false OR pass is false choice=2 choice = 1 choice = 3 FALSE false TRUE Choice = 1 Choice = 2 Coins Coins Notes NO YES  **Manager Section:**

CustomerClass::GetUsersOrder()

Print the net Salas and more info about the sales

If Choice

Prompt the user to either collect the money or make another transaction

Print the salary

Prompt the Manager to choose a transaction

If UserName & Password

Enter UserName &

Password

Prompt the Manager to Refill the machine

Prompt the user to choose exit or repeat

ManagerClass:: DisplayTransactions()

If repeat

End

Prompt the user to enter a choice

Print “1- Get a drink

2- insert some money”

Choice

CustomerClass::DisplayTheOptions()

CustomerClass::GetUsersMoney ()

Prompt the user to enter the drink code and the amount

Prompt the user to choose to insert Notes or Coins

Choice

CustomerClass::CheckTheBalance()

CustomerClass::CalculateThePrice()

CustomerClass::CheckTheAmount()

Prompt the user to enter the amount of money

Prompt the user to enter the amount of money

CustomerClass::CheckMoneyNotes()

Balance -= price

CustomerClass::continueChoice()

CustomerClass::CalculateTheMoney()

CustomerClass::EndOfProgram()

END

CustomerClass::GetUsersOrder()

CustomerClass::GetUsersOrder()

* class ManagerClass
* private:
* string username;
* string password;
* public:
* void GetManagerDetails();
* void CheckThePasswordLenght();
* void CheckTheUserNameAndPassword();
* void DisplayTransactions();
* void Transaction(string choice);
* int CheckBrandName(string);
* void RefillTheMachine();
* void continueChoice();
* void endOFProgram();
* int ChangeStringToInt(string);
* void OutPutTheSalary(); //read the salary from a file.
* void DisplayBrandsAmount();
* void DisplaySlaesHistory(); //read the sales history from a file.

**Customer Class(21 Functions):**

class CustomerClass

private:

int NumOfPurcahes;

double notes;

double coins;

double balance = 0.0;

double totalPurchases;

double totalDeposit = 0.0;

int AS[9] = {0}; //for the recipt.

string NOS[9]; //for the recipt.

public:

void DisplayTheOptions();

void CalculateTheMoney(int, double);

void GetTheUsersMoney();

void GetUsersOrder();

void checkTheAmount(int);

void calculateThePrice(int, int);

void checkTheBalance(double, int, int);

void continueChoice();

void endOFProgram();

int ChangeStringToInt(string);

void CheckTheCurrentBalance();

int DisplayTheNotes();

double DisplayTheCoins();

void GetUsersOrderReady(int, int);

void PrintingTheRecipt();

void UpdateTheSalary();

void PurchaseHistory();

**Vending machine Algorithm(Use of the fuction)**

1. Start
2. Call OpeningTheProgram function

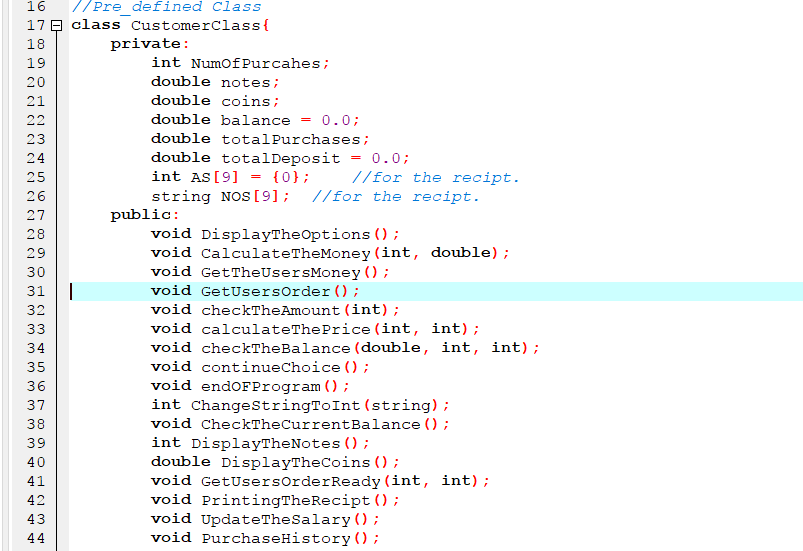
* Call instructions Function:

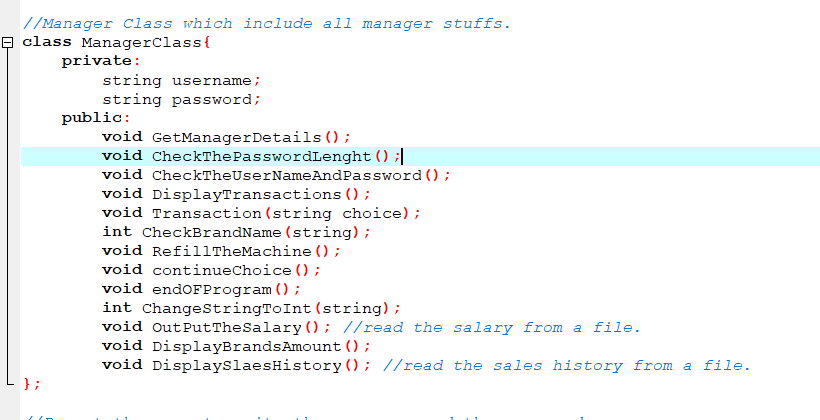
1. Print “Welcome to Al-sufi Vending Machine.”
2. Print “Instructions”
3. Print “1- Manager:”
4. Print “You can collect your salary with any amount you want but not exceed the amount in the Account.”
5. Print “You can Refill this Vending machine with any amount from 1 - 20 Cans.”
6. Print “You can check how many Cans has been sold.”
7. Print “You have to login to your account using your username and password.”
8. Print “Username should make sure that the Capitalization is right.”
9. Print “Password should contain 6 digits.”
10. Print “2- Customer:”
11. Print “You can buy Cans with any amount you want but not exceed 20 Cans.”
12. Print “If you don't have enough money you can left any type of can and take another.”
13. Print “You can insert money either coins or notes.”
14. Print “Once you finish your transactions Please check your Balance.”
15. Print “3- Both Manager and Customers:”
16. Print “Please choose only the transaction that already displayed because the program will close automatically after 10 Wrong inputs”.

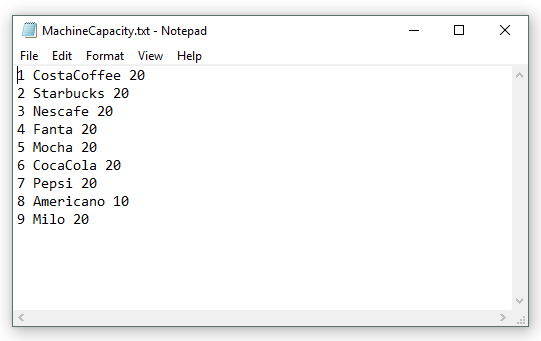
* Prompt the user to choose customer or Manager.
* If manager:
  + Call GetManagerDetails function from ManagerClass.
  + Prompt the manager to enter the username and the password.
  + Checking from the length of the password by function called ChechThePasswordLength().
  + If the length is false:
    - Print “Invalid password”.
    - Prompt the user to enter the password again.
* Else if the length is true the function. CheckTheUserNameAndPassword() is called.
* If the username and password is false
* Print ”Invalid username or password”.
* Else if the username and the password is true.
* The manager can choose any transaction as following:
* 1- Display the net sales and get more information such as ‘How many number of each cans has been sold’.
* 2- Salary which make the manager check his salary and collect his money.
* 3- Refill the machine which allow the manager to refill with maximum 20 Cans the machine if any Can has sold out.
* After the manager finishing his transactions he will be given a choice to either make another transaction or exit.
* If the manager chooses to exit the massage “Have a nice day sir” will be displayed.
* Else if he want to make another transaction the manager will repeat all the processes again by calling function called DisplayTransaction().
* Else if customer:
* Call function called GetUserOrder in CustomerClass
* The Customer should choose either to get a drink or to insert money.
* If the customer choose insert money so he can insert either notes or coins using function called GetTheUsersMoney()
* If the Customer want to but money notes so the program has to check that the amount has no decimal number using function called checkMoneyNotes.
* Else if the customer choose to get a drink so the program call function called Display the option()
* The customer has to choose a drink and insert the number of pieces he want if he has enough money the remind balance will display.
* The balance calculating by function called calculate the price then the balance has to be checked by function Called checkTheBalance().
* If he has not enough money he choose either to continue the transactions and insert the money or left some cans to can buy another if he bought some.
* Else the remainder calculated by function called ClaculateTheMoney
* After that the user has the choice to either leave the program or to make another transaction.
* If the user choose to exit the massage “Have a nice day see you soon” will be displayed
* Else the user will make the same processes again by calling function called GetUsersOrder().

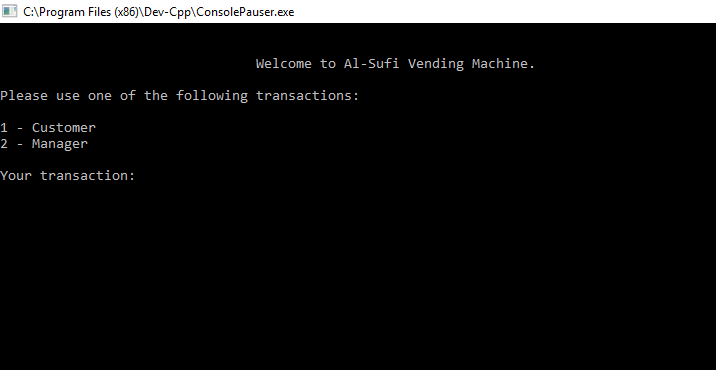
1. End.

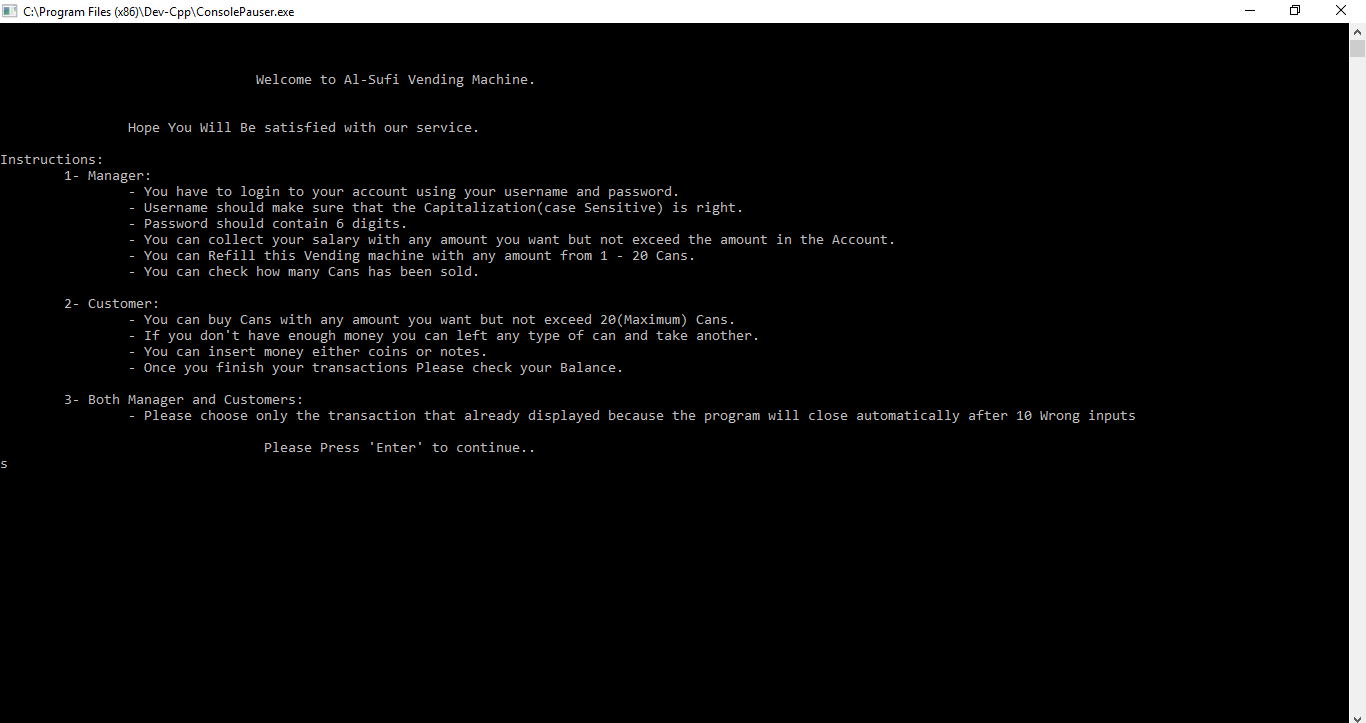
**Screenshots:**

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