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INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA  
يُونِيسْتِي إِسْلَامْ إِنْتَارَايَغْسِيَا مَلِيسِيَا

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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.

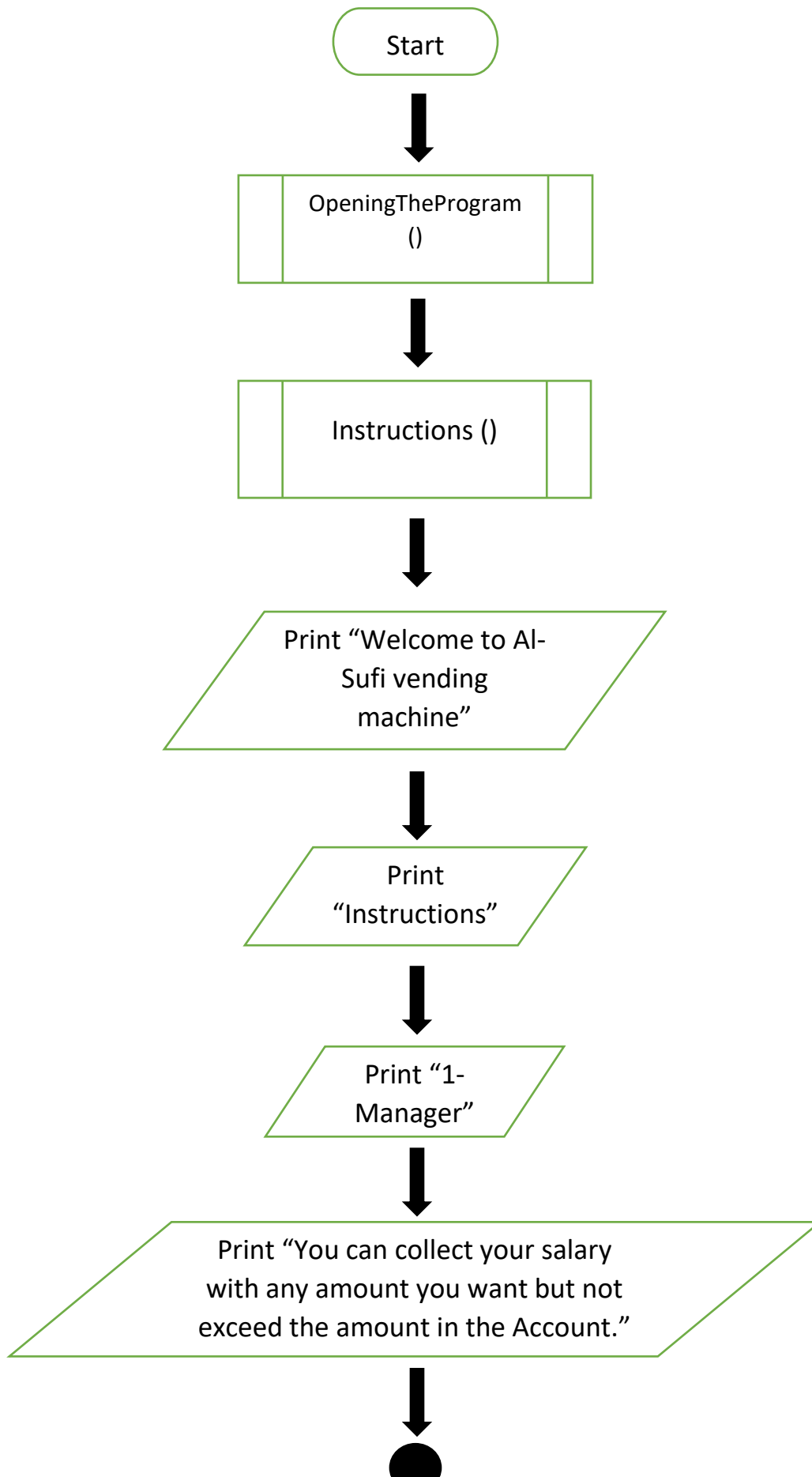
**Input:**

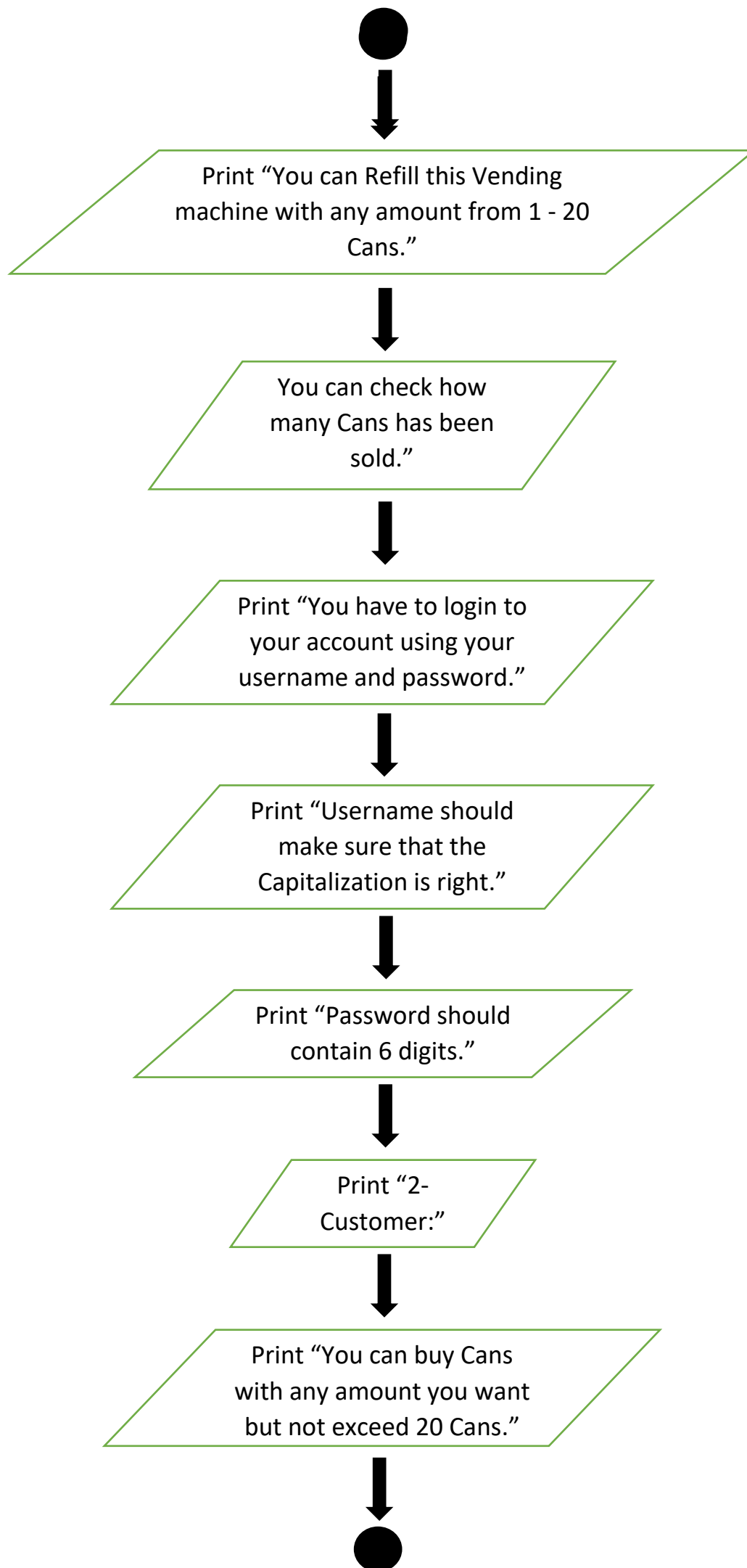
- *Int moneyNotes.*
- *Float moneyCoins.*
- *Char Choice.*

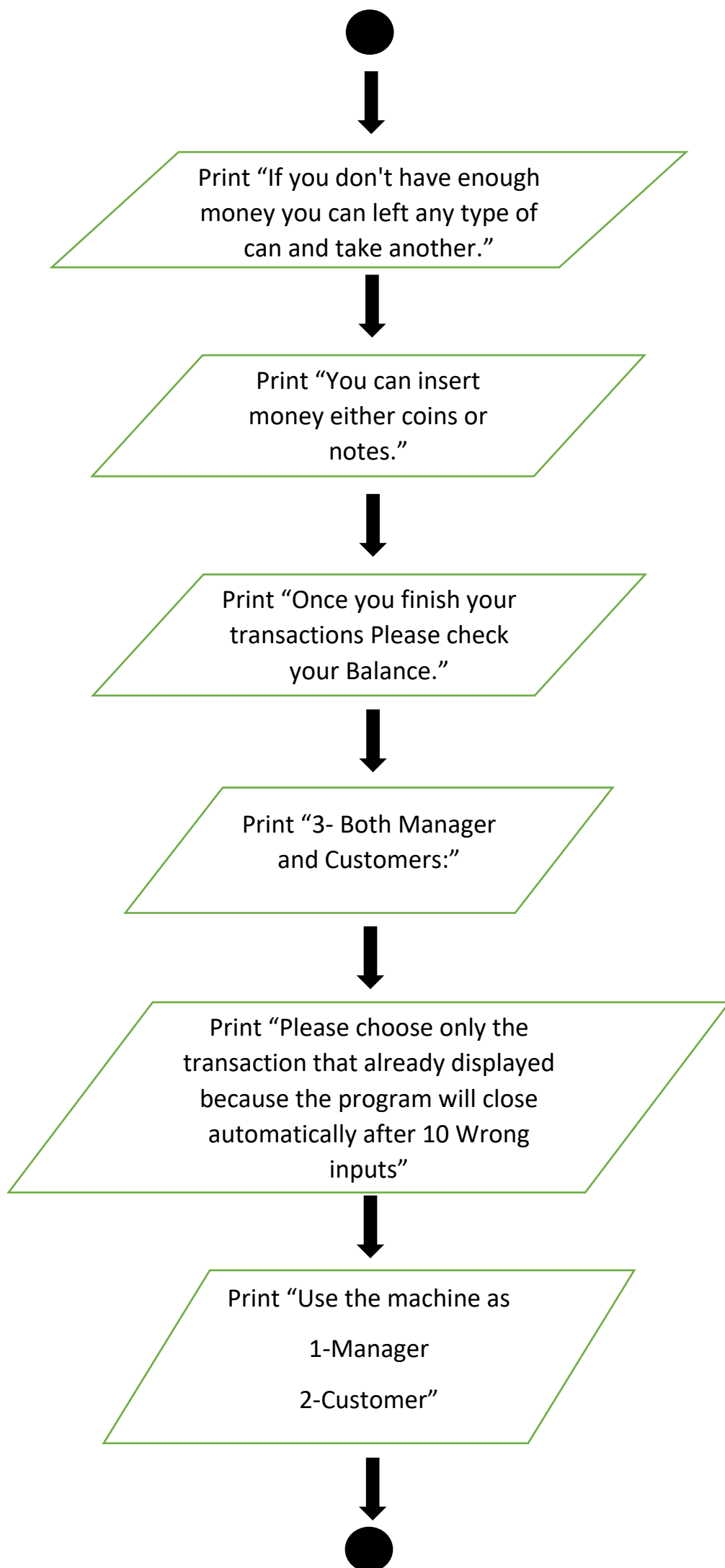
**Output:**

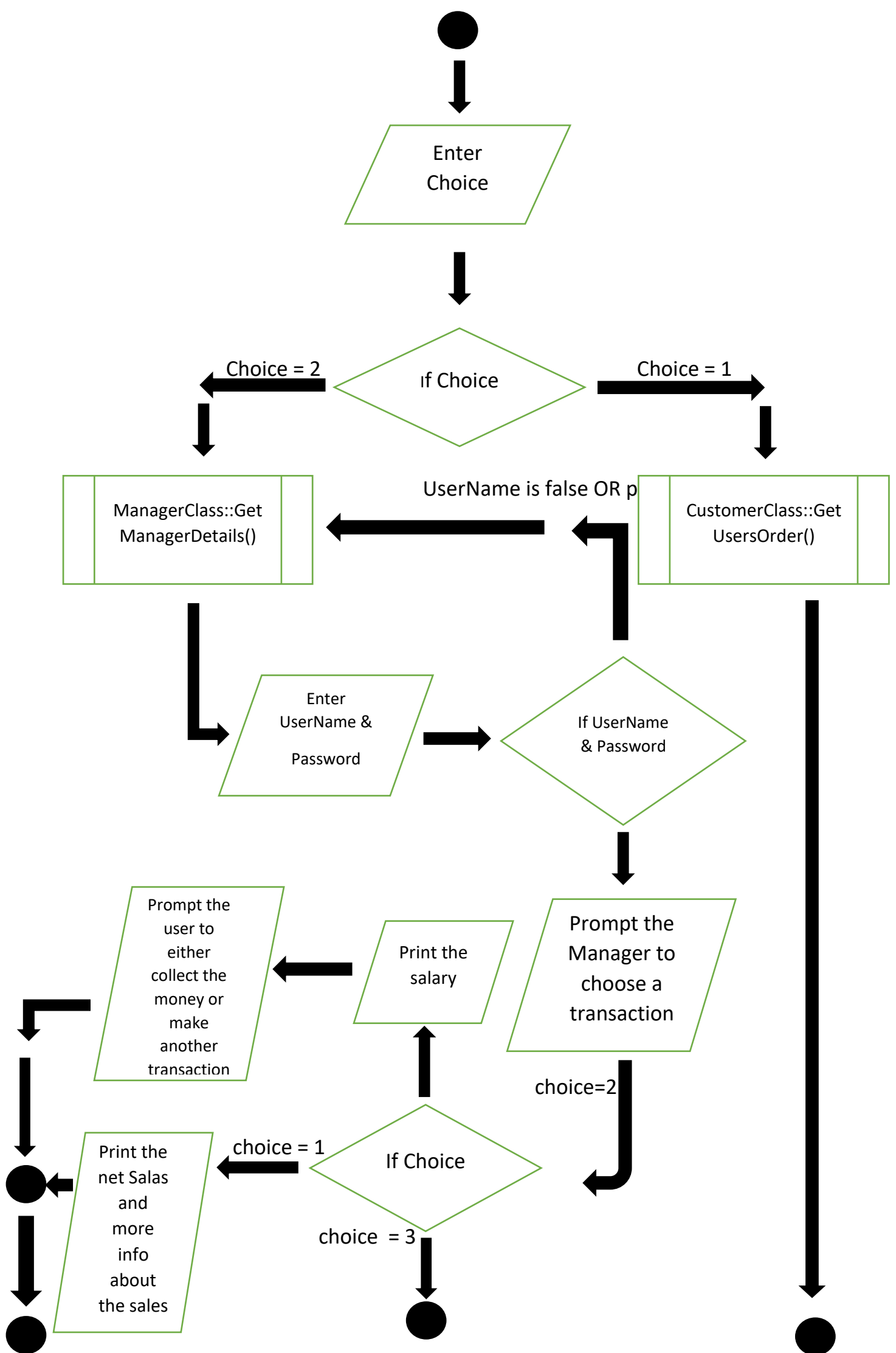
- Float balance.
- Int numOfCans.
- String typesOfCans.

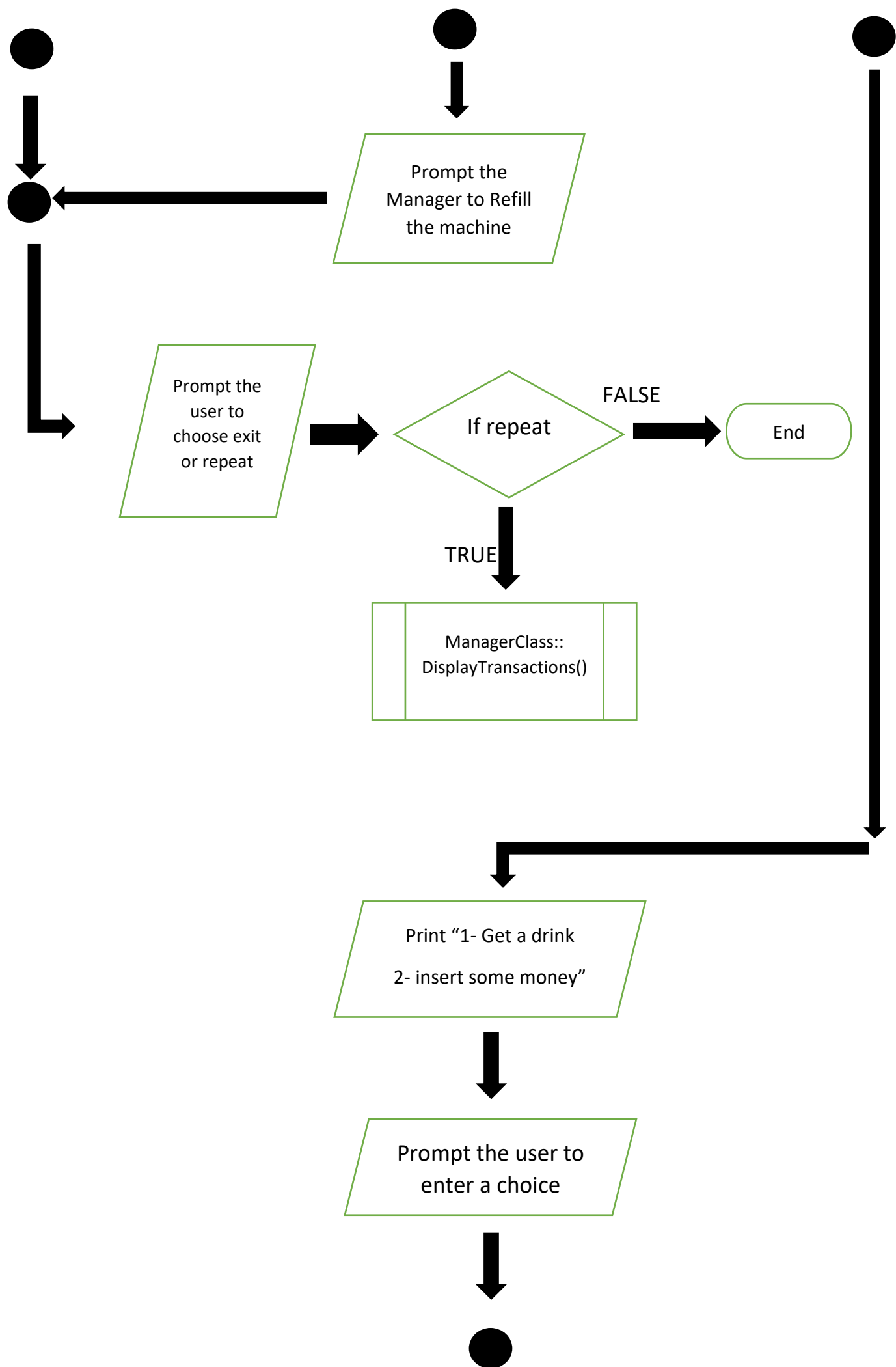
## Flow Chart:

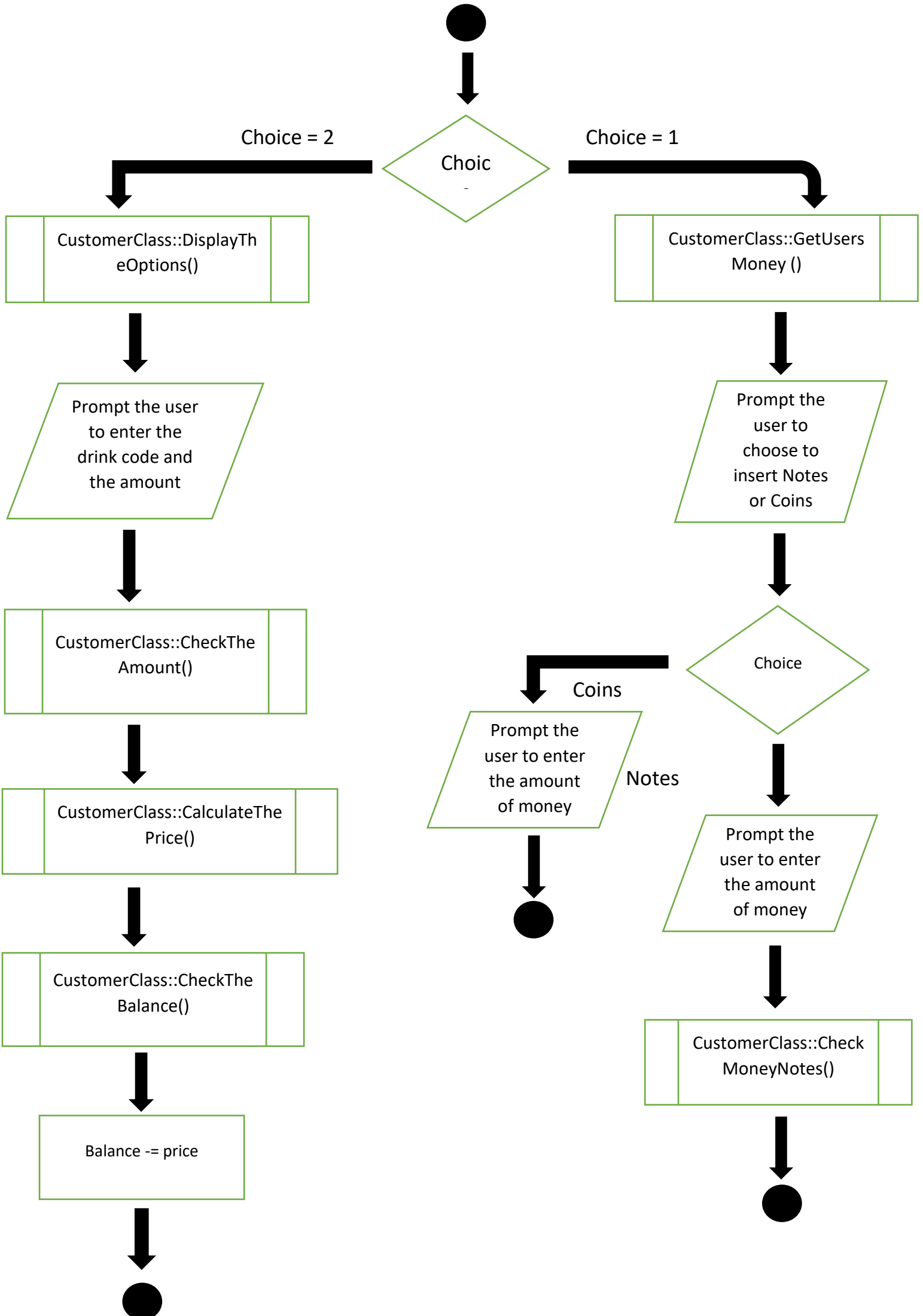




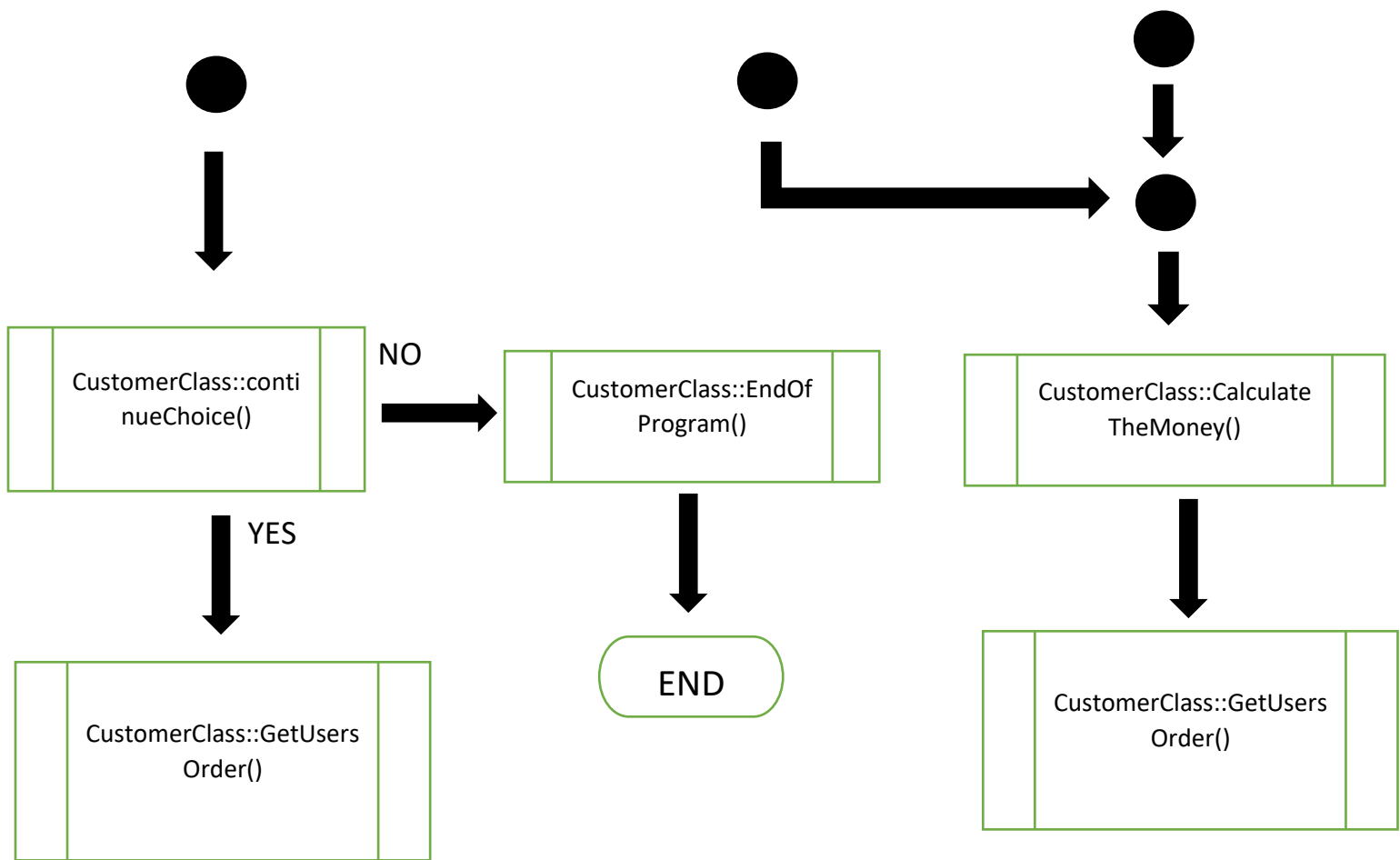












### Manager Section:

- 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 receipt.  
string NOS[9]; //for the receipt.

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:
    - I. Print "Welcome to Al-sufi Vending Machine."
    - II. Print "Instructions"
    - III. Print "1- Manager:"
    - IV. Print "You can collect your salary with any amount you want but not exceed the amount in the Account."
    - V. Print "You can Refill this Vending machine with any amount from 1 - 20 Cans."
    - VI. Print "You can check how many Cans has been sold."
    - VII. Print "You have to login to your account using your username and password."
    - VIII. Print "Username should make sure that the Capitalization is right."
    - IX. Print "Password should contain 6 digits."
    - X. Print "2- Customer:"
    - XI. Print "You can buy Cans with any amount you want but not exceed 20 Cans."
    - XII. Print "If you don't have enough money you can left any type of can and take another."
    - XIII. Print "You can insert money either coins or notes."
    - XIV. Print "Once you finish your transactions Please check your Balance."

XV. Print "3- Both Manager and Customers:"

XVI. 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 CheckThePasswordLength().
  - 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 message “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 message "Have a nice day see you soon" will be displayed
- ❖ Else the user will make the same processes again by calling function called `GetUsersOrder()`.

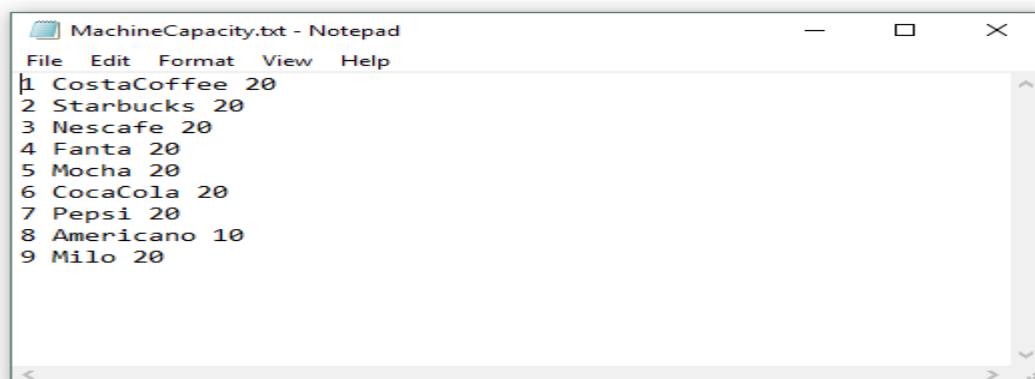
3. End.



## Screenshots:

```
16 //Pre_defined Class
17 class CustomerClass{
18     private:
19         int NumOfPurcahes;
20         double notes;
21         double coins;
22         double balance = 0.0;
23         double totalPurchases;
24         double totalDeposit = 0.0;
25         int AS[9] = {0}; //for the receipt.
26         string NOS[9]; //for the receipt.
27     public:
28         void DisplayTheOptions();
29         void CalculateTheMoney(int, double);
30         void GetTheUsersMoney();
31         void GetUsersOrder();
32         void checkTheAmount(int);
33         void calculateThePrice(int, int);
34         void checkTheBalance(double, int, int);
35         void continueChoice();
36         void endOFFProgram();
37         int ChangeStringToInt(string);
38         void CheckTheCurrentBalance();
39         int DisplayTheNotes();
40         double DisplayTheCoins();
41         void GetUsersOrderReady(int, int);
42         void PrintingTheReceipt();
43         void UpdateTheSalary();
44         void PurchaseHistory();
```

```
//Manager Class which include all manager stuffs.
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 endOFFProgram();
        int ChangeStringToInt(string);
        void OutPutTheSalary(); //read the salary from a file.
        void DisplayBrandsAmount();
        void DisplaySlaesHistory(); //read the sales history from a file.
};
```



MachineCapacity.txt - Notepad

File Edit Format View Help

```
1 CostaCoffee 20
2 Starbucks 20
3 Nescafe 20
4 Fanta 20
5 Mocha 20
6 CocaCola 20
7 Pepsi 20
8 Americano 10
9 Milo 20
```

C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

Welcome to Al-Sufi Vending Machine.

Please use one of the following transactions:

- 1 - Customer
- 2 - Manager

Your transaction:

C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

Welcome to Al-Sufi Vending Machine.

Hope You Will Be satisfied with our service.

Instructions:

1- Manager:

- You have to login to your account using your username and password.
- Username should make sure that the Capitalization(case sensitive) is right.
- Password should contain 8 digits.
- You can collect your salary with any amount you want but not exceed the amount in the Account.
- You can Refill this vending machine with any amount from 1 - 10 Cans.
- You can check how many Cans have been sold.

2- Customer:

- You can Buy Cans with any amount you want but not exceed 10(Maximum) Cans.
- If you don't have enough money you can left any type of can and take another.
- You can Insert money either coins or notes.
- Once you finish your transactions Please check your balance.

3- Both Manager and Customer:

- Please choose only the transaction that already displayed because the program will close automatically after 10 wrong inputs.
- Please Press 'Enter' to continue...

C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

How can i help you sir?

- 1 : Sales History
- 2 :Salary
- 3 : Refill The Machine.
- 4 : Exit

Your Transaction:

Receipt.txt - Notepad

File Edit Format View Help

Al-Sufi Vending Machine  
Receipt

Purchases:

- 1- Fanta: 2 Piece(s)
- 2- CocaCola: 2 Piece(s)
- 3- Americano: 2 Piece(s)

You did deposit: RM200.

Your remainder Balance: RM176.4.

THANK YOU ^ ^  
See You Soon.

C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

How can i help you sir?

- 1 : Sales History
- 2 :Salary
- 3 : Refill The Machine.
- 4 : Exit

Your Transaction:

Salary.txt - Notepad

File Edit Format View Help

- 1 Zian 30.0334
- 2 Sami 32
- 3 Leepu 7.86667
- 4 Istiak 27.8667