

## Assignment # 02

**Question 1:** You are required to develop menu-driven console application using functions by assessing the requirement from the undermentioned scenarios.

**Part 1:** A local bank is looking for a simplified banking system that allows customers to manage their accounts using a text-based console application. When a new customer visits the bank, they must be able to open an account by providing their name, selecting an account number, and making an initial deposit. Once an account is created, the customer should be able to deposit money, withdraw funds, and check their current balance. However, withdrawal requests must be validated to ensure the account does not go into a negative balance. The system should remain operational until the customer chooses to exit.

**Code:**

```
#include<iostream>
#include<string>
using namespace std;

// function to deposit money
void deposit(float &totalBalance){
    float amount = 0.00;
    cout << "Enter amount you want to deposit: ";
    cin >> amount;
    totalBalance += amount;
    cout << endl;
    cout << "Your new balance is: "<<totalBalance<<endl;
    cout << endl;
}

// function withdraw money
void withdraw(float &totalBalance){
    float amount = 0.00;
    cout << "Enter amount you want to withdraw: ";
    cin >> amount;
    if(amount <= totalBalance){
        totalBalance -= amount;
        cout << endl;
        cout << "Your new balance is: "<<totalBalance<<endl;
        cout << endl;
    }
    else{
        cout << endl;
        cout << "Insufficient balance."<<endl;
        cout << endl;
    }
}
```

```
}

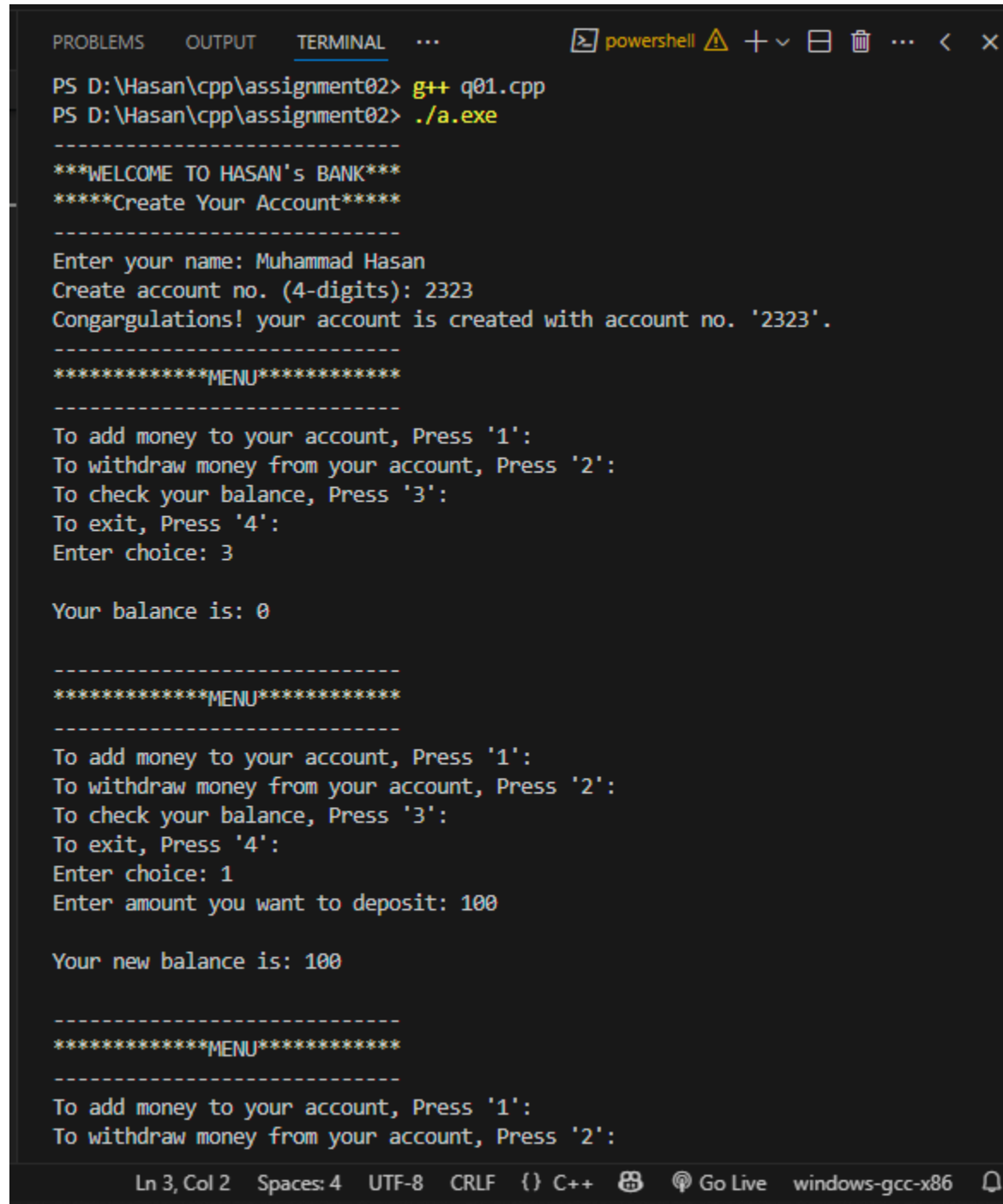
int main(){
    string name;
    int accNo = 0; //we will take random acc no. from user
    float totalBalance = 0.00;
    cout << "-----"<<endl;
    cout << "***WELCOME TO HASAN's BANK***"<<endl;
    cout << "*****Create Your Account*****"<<endl;
    cout << "-----"<<endl;
    cout << "Enter your name: ";
    getline(cin,name);
    cout << "Create account no. (4-digits): ";
    cin >> accNo;
    cout << "Congargulations! your account is created with account no.
\' "<< accNo << "\'."<<endl;

    int choice = 0; // for condition of do while
    do{
        cout << "-----"<<endl;
        cout << "*****MENU*****"<<endl;
        cout << "-----"<<endl;
        cout << "To add money to your account, Press '1': "<<endl;
        cout << "To withdraw money from your account, Press '2': "<<endl;
        cout << "To check your balance, Press '3': "<<endl;
        cout << "To exit, Press '4': "<<endl;
        cout << "Enter choice: ";
        cin >> choice;

        if(choice == 1){
            deposit(totalBalance); //calling deposit function
        }
        else if(choice == 2){
            withdraw(totalBalance); //calling withdraw function
        }
        else if(choice == 3){ //if he choose to check balance
            cout <<endl;
            cout << "Your balance is: "<<totalBalance<<endl;
            cout << endl;
        }
        else if(choice == 4){
            cout <<endl;
            cout << "Ending program with balance: "<<totalBalance<<endl;
        }
        else{

```

```
        cout << "Invalid choice!"<<endl;
    }
}while (choice!=4);
}
```

**Output:**

```
PS D:\Hasan\cpp\assignment02> g++ q01.cpp
PS D:\Hasan\cpp\assignment02> ./a.exe
-----
***WELCOME TO HASAN's BANK***
*****Create Your Account*****
-----
Enter your name: Muhammad Hasan
Create account no. (4-digits): 2323
Congangulations! your account is created with account no. '2323'.
-----
*****MENU*****
-----
To add money to your account, Press '1':
To withdraw money from your account, Press '2':
To check your balance, Press '3':
To exit, Press '4':
Enter choice: 3

Your balance is: 0

-----
*****MENU*****
-----
To add money to your account, Press '1':
To withdraw money from your account, Press '2':
To check your balance, Press '3':
To exit, Press '4':
Enter choice: 1
Enter amount you want to deposit: 100

Your new balance is: 100

-----
*****MENU*****
-----
To add money to your account, Press '1':
To withdraw money from your account, Press '2':
```



**Part 2:** A supermarket wants to automate its checkout process by introducing a simple billing system. The cashier should be able to view a fixed list of available products along with their prices. When a customer is ready to make a purchase, the system should allow the cashier to enter the quantity of each product, after which it should calculate the total bill and apply sales tax.

To encourage more sales, the supermarket offers a discount for purchases above 500 currency units. The system should also generate a final invoice displaying item-wise details, tax, discounts, and the final amount payable.

After completing a transaction, the cashier should be able to process another customer's order without restarting the program. Features to Implement:

- i. Display a fixed list of products with prices
- ii. Allow multiple item purchases and quantity input
- iii. Calculate total bill with applicable tax and discounts
- iv. Print an invoice with complete details
- v. Loop the program to handle multiple transactions

**Code:**

```

#include<iostream>
using namespace std;

void productList(){
    cout << "S.No. | Product Name | Price"<<endl;
    cout << " 1.      Soap          RS 100"<<endl;
    cout << " 2.      Shampo         RS 200"<<endl;
    cout << " 3.      Cream           RS 150"<<endl;
    cout << " 4.      Hair Oil        RS 300"<<endl;
    cout << " 5.      Charger         RS 500"<<endl;
}

//function to calculate bill, bcuz after showing list of products he will buy something
void calculateBill(int p1, int p2, int p3, int p4, int p5, float &actual_price, float &disc_price, float &final_price){
    //actual, discount & final prices are transferred by reference, bcuz they will do some changes with them

    //calculating actual price
    actual_price = ((p1*100)+(p2*200)+(p3*150)+(p4*300)+(p5*500));
    // giving discount
    if(actual_price > 500){
        cout << "Your bill is: "<<actual_price<<endl;
        cout << "Congratulations! you are getting a discount of 10%"<<endl;
        disc_price = actual_price*(0.9);
        cout << "Now your bill is: "<<disc_price<<endl;
    }
    else{
        disc_price = actual_price;
        cout << "Your bill is: "<<disc_price<<endl;
    }
    //adding sales tax
    cout << "You have to pay 10% sales tax on your bill."<<endl;
    //10% sales tax
    final_price = (disc_price+(disc_price*0.1));
    cout << "Your payable amount with tax is: "<<final_price<<endl;
}

// for displaying summary
void displaySummary(int p1, int p2, int p3, int p4, int p5, float actual_price, float disc_price, float final_price){
    cout << "*****SUMMARY*****"<<endl;
}

```

```
    if(p1 > 0){
        cout << "Item Name: Soap      | Qty: "<<p1<<" | Unit Price: 100"<<endl;
    }
    if(p2 > 0){
        cout << "Item Name: Shampo   | Qty: "<<p2<<" | Unit Price: 200"<<endl;
    }
    if(p3 > 0){
        cout << "Item Name: Cream    | Qty: "<<p3<<" | Unit Price: 150"<<endl;
    }
    if(p4 > 0){
        cout << "Item Name: Hair Oil | Qty: "<<p4<<" | Unit Price: 300"<<endl;
    }
    if(p5 > 0){
        cout << "Item Name: Charger  | Qty: "<<p5<<" | Unit Price: 500"<<endl;
    }
    else{
        cout << "You Purchased Zero Items."<<endl;
    }
    cout << endl;
    cout << "You have purchased total \"<<(p1+p2+p3+p4+p5)<<\" items."<<endl;
    cout << "Your actual bill is: "<<actual_price<<endl;
    if(actual_price>disc_price){ // showing this only if he get's discount
        cout << "Your discounted bill is: "<<disc_price<<endl;
    }
    cout << "Your payable amount after adding 10% sales tax is:
"<<final_price<<endl;
    cout << endl;
}

int main(){
    cout << "-----"<<endl;
    cout << "***WELCOME TO HASAN SUPER MARKET***"<<endl;
    bool choice; //for further bills
    do{
        cout << "-----"<<endl;
        cout << "*****Product List*****"<<endl;
        cout << "-----"<<endl;
        productList();
        cout << "-----"<<endl;

        int p1 = 0, p2 = 0, p3 = 0, p4 = 0, p5 = 0;
        float actual_price = 0.00, disc_price = 0.00, final_price = 0.00;

        cout << "Enter quantity of 1st product: ";
        cin >> p1;
```

```
    cout << "Enter quantity of 2nd product: ";
    cin >> p2;
    cout << "Enter quantity of 3rd product: ";
    cin >> p3;
    cout << "Enter quantity of 4th product: ";
    cin >> p4;
    cout << "Enter quantity of 5th product: ";
    cin >> p5;

    cout << "-----"<<endl;
    calculateBill(p1, p2, p3, p4, p5, actual_price, disc_price, final_price);
    cout << "-----"<<endl;
    displaySummary(p1, p2, p3, p4, p5, actual_price, disc_price,
final_price);
    cout << "-----"<<endl;

    cout << "Do you want to calculate another bill (0/1)? ";
    cin >> choice;
}while(choice);
    cout << "Program closed..."<<endl;
}
```



**Output:**

```
PROBLEMS OUTPUT TERMINAL ... powershell
PS D:\Hasan\cpp\assignment02> g++ q02.cpp
PS D:\Hasan\cpp\assignment02> ./a.exe

-----
***WELCOME TO HASAN SUPER MARKET***
-----
*****Product List*****
-----
S.No. | Product Name | Price
1.    Soap      RS 100
2.    Shampo    RS 200
3.    Cream     RS 150
4.    Hair Oil   RS 300
5.    Charger   RS 500
-----
Enter quantity of 1st product: 1
Enter quantity of 2nd product: 2
Enter quantity of 3rd product: 3
Enter quantity of 4th product: 4
Enter quantity of 5th product: 0
-----
Your bill is: 2150
Congragualtions! you are getting a discount of 10%
Now your bill is: 1935
You have to pay 10% sales tax on your bill.
Your payable amount with tax is: 2128.5
-----
*****SUMMARY*****
Item Name: Soap      | Qty: 1 | Unit Price: 100
Item Name: Shampo    | Qty: 2 | Unit Price: 200
Item Name: Cream     | Qty: 3 | Unit Price: 150
Item Name: Hair Oil   | Qty: 4 | Unit Price: 300
You Purchased Zero Items.

You have purchased total '10' items.
Your actual bill is: 2150
Your discounted bill is: 1935
```

```
PROBLEMS OUTPUT TERMINAL ... powershell [Warning] + - [Icon] [Icon] ... < X

Your actual bill is: 2150
Your discounted bill is: 1935
Your payable amount after adding 10% sales tax is: 2128.5

-----
Do you want to calculate another bill (0/1)? 1
-----
*****Product List*****
-----
S.No. | Product Name | Price
1.    Soap      RS 100
2.    Shampo    RS 200
3.    Cream     RS 150
4.    Hair Oil  RS 300
5.    Charger   RS 500
-----
Enter quantity of 1st product: 0
Enter quantity of 2nd product: 0
Enter quantity of 3rd product: 0
Enter quantity of 4th product: 0
Enter quantity of 5th product: 0
-----
Your bill is: 0
You have to pay 10% sales tax on your bill.
Your payable amount with tax is: 0
-----
*****SUMMARY*****
You Purchased Zero Items.

You have purchased total '0' items.
Your actual bill is: 0
Your payable amount after adding 10% sales tax is: 0

-----
Do you want to calculate another bill (0/1)? 0
Program closed...
PS D:\Hasan\cpp\assignment02>
```