UMKC
School of Computing
and Engineering

Assignment 3 **Due: October 7th**

Electronics store Discount

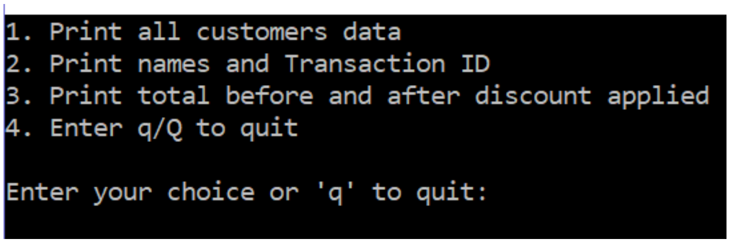
The assignment problem:

You are asked to develop an application that prints a receipt for customers after store 40% discount. In this program you need to read a file of customers data into different arrays, pass these arrays to functions as (array parameter), calculate the total discount for each customer, then print some information.

The input file “input.txt” contains the following information (Transaction ID, first name, last name, and total before discount). You have to store these different columns in different arrays where each index represents a customer data.

Preliminaries

1. We will consider the file contains 10 rows maximum. So all your arrays size must be at least 10.
2. Since the size of all the arrays is 10, so it is better to create a constant variable with the value 10 than hard coding the arrays size. Hint: You will need to pass this constant to your functions later on as your array size to limit your loops iterations.
3. Create four different arrays with different types based on the data in the file.
4. Create an “ifstream” object to read the data from the input file.
5. Read and store the data from the input file in your arrays using a single “for” loop.
6. Create a “switch” statement with four options and the output should be generated based on the chosen option. Check the options below:



```
1. Print all customers data
2. Print names and Transaction ID
3. Print total before and after discount applied
4. Enter q/Q to quit

Enter your choice or 'q' to quit:
```

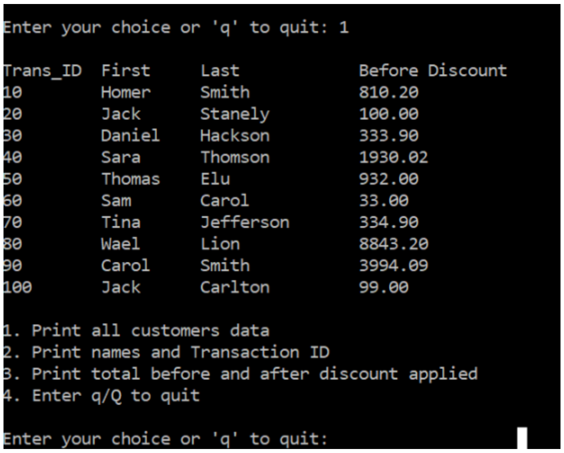
Required functions:

1. A function “printCustomersData” should be called when the user chooses the first option. This function is of type void (it does not return anything). “printCustomersData” function accepts five parameters

(four arrays and the size). This function should print a table of the customer's data. Check the function prototype below:

void printCustomersData(const int id[], const string first[], const string last[], const double before_Discount[],int size);

Output of option 1:

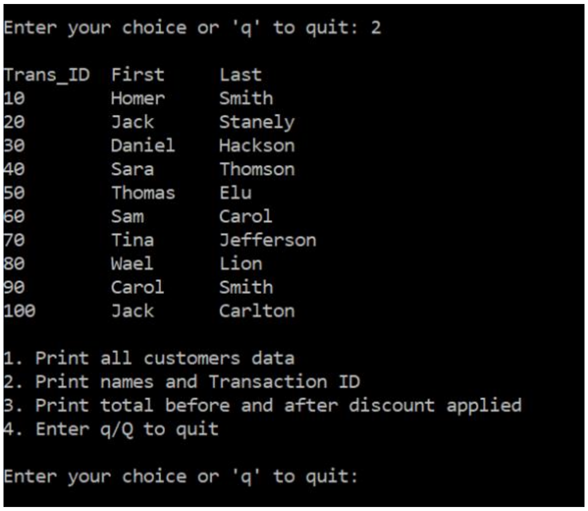


```
Enter your choice or 'q' to quit: 1

Trans_ID  First     Last          Before Discount
10        Homer     Smith         810.20
20        Jack      Stanely       100.00
30        Daniel    Hackson       333.90
40        Sara      Thomson       1930.02
50        Thomas    Elu           932.00
60        Sam       Carol         33.00
70        Tina      Jefferson     334.90
80        Wael      Lion          8843.20
90        Carol     Smith         3994.09
100       Jack      Carlton       99.00

1. Print all customers data
2. Print names and Transaction ID
3. Print total before and after discount applied
4. Enter q/Q to quit

Enter your choice or 'q' to quit:
```

Note that the "switch" statement must be inside a "while" loop, which means that after each option selection, the options will be printed again.

2. The function "printNames" prints the Transaction ID, first, and last name of each customer (the output should also be as a table). This function accepts four parameters (three arrays and the size). See the function prototype bellow:

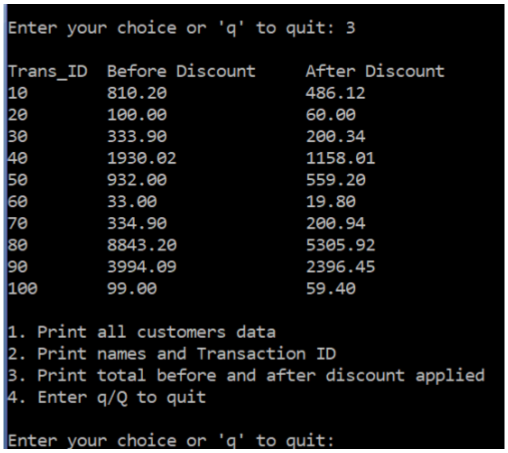
   void printNames(const int id[], const string first[], const string last[], int size);



```
Enter your choice or 'q' to quit: 2

Trans_ID  First     Last
10        Homer     Smith
20        Jack      Stanely
30        Daniel    Hackson
40        Sara      Thomson
50        Thomas    Elu
60        Sam       Carol
70        Tina      Jefferson
80        Wael      Lion
90        Carol     Smith
100       Jack      Carlton

1. Print all customers data
2. Print names and Transaction ID
3. Print total before and after discount applied
4. Enter q/Q to quit

Enter your choice or 'q' to quit:
```

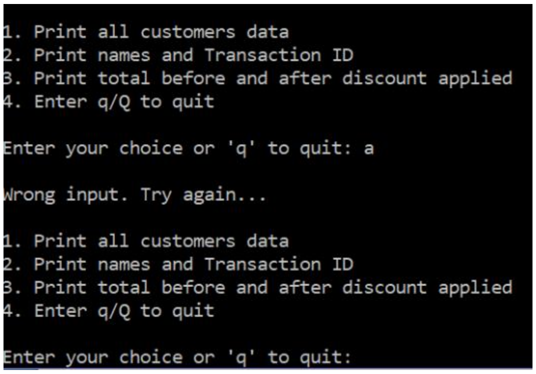
3. The function "printTotal" that prints all customers Transaction IDs, total before discount, and total after discount applied for each customer. As mentioned before, the output has to be in a table. This function accepts three parameters (two arrays and the size). This is the function prototype:

```
void printTotal(const int id[], const double before_Discount[],int size);
```



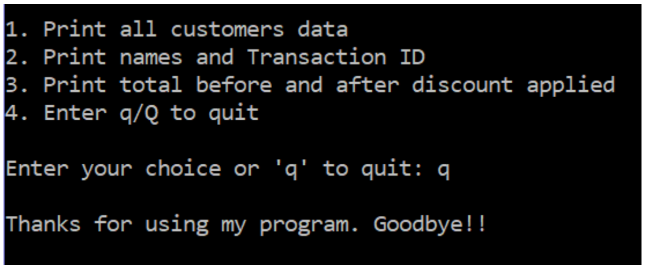
```
Enter your choice or 'q' to quit: 3

Trans_ID  Before Discount     After Discount
10        810.20              486.12
20        100.00              60.00
30        333.90              200.34
40        1930.02             1158.01
50        932.00              559.20
60        33.00               19.80
70        334.90              200.94
80        8843.20             5305.92
90        3994.09             2396.45
100       99.00               59.40

1. Print all customers data
2. Print names and Transaction ID
3. Print total before and after discount applied
4. Enter q/Q to quit

Enter your choice or 'q' to quit:
```

If the user entered something not in the options such as the letter 'a', the application should not be terminated. Instead, the application should print a message that tells the user that his/her input was incorrect, then the options should be displayed again, and the application should ask the user to enter another option.



```
1. Print all customers data
2. Print names and Transaction ID
3. Print total before and after discount applied
4. Enter q/Q to quit

Enter your choice or 'q' to quit: a

Wrong input. Try again...

1. Print all customers data
2. Print names and Transaction ID
3. Print total before and after discount applied
4. Enter q/Q to quit

Enter your choice or 'q' to quit:
```

As mentioned before, the options will be printed after each selection. Even when the user enters an invalid value. The only way to terminate the program is to enter 'q' or 'Q' which is the fourth option.



```
1. Print all customers data
2. Print names and Transaction ID
3. Print total before and after discount applied
4. Enter q/Q to quit

Enter your choice or 'q' to quit: q

Thanks for using my program. Goodbye!!
```

Control Flow:

The application should start by reading the data from the input file. Then create a “while” loop to repeat the options after each selection. Within the “while” loop, create your “switch” statement that contains the different options. Each case/option inside the “switch” statement should execute a function call.

Hints:

1. All arrays must be passed as constant array parameters, since all functions will print these arrays without changing their items value.
2. Create a constant variable to use it as the size of the arrays.
3. Create an “if” statement to check if the file reading process went well. You can use many expressions such as: (!fin) or (fin.fail()), etc.
4. Do not forget the “break” statement after each case inside the “switch” statement.
5. Use the function “setw(number)” that helps you to print the data in a shape of table. This function sets the number of spaces for each output. The function is in the <iomanip> library.
6. Write some comments that help the reader to understand the purpose of each loop and function. Inside functions, write preconditions and postconditions.
7. Save the whole project and zip it before uploading it to Canvas. (Do not copy and paste your code to a ‘.txt’ file or Word file).

Submission:

- Zip up your entire project folder and submit the zip file to Canvas **by the deadline.**