CS 150 **Lab Assignment 5** **Spring 2016**

Part A. You. Yes you. Your assignment for this lab, is to create an enhanced C++ program, similar to our previous lab assignment - once again, the program calculates the billing amount for cable company customers. You will create an enhanced version similar to the example programs that were covered in lecture. Important – read all of this short document, and then read and run the template program provided. That should only take ten minutes,.. but it will make a big difference in your understanding and successfully completing this lab. You'll know what you have to do, and what is provided already, and you'll have combed through the hints in this document and in the comments in the code template provided. The program should print the billing amount to two decimal places, which is standard for monetary amounts. Additional requirements for this lab include:

- Present **a menu** to the user with the following options:
    1. Specify an input data file. Prompt the user for the name of the input file. If this action is not taken, then use the default input data file while processing the information. Default file name is lab5input.txt.
    2. Add a customer record to the default input file.
        - Prompt user for customer type and associated data values, and write to lab5input.txt, appending the new data to the end of the file.
    3. Process the input file, containing the cable company customers.
        - The program will read and process all customer records contained in the input file, and then write all information to the output file, in a manner similar to lab 4. In addition, calculate and output the following after all records are processed.
            - total number of customers processed
            - total amount billed to all customers in the input file. Round this value up, using the static_cast method demonstrated in lecture. (see text example too).

    4.Display program information. The following information should be sent to the screen:

        i. Programmer Name, UIN, Program Description, Date.

    5.Include an additional category of customer – **Education**, identified with the character '**E**' or '**e**', and use the following fees for educational customers, by implementing named constants:

        i. Education bill processing fee = $103.00
        ii. Education basic service cost = $152.00
        iii. Education premium channel cost = $77.00
        iv. Education billing is similar to residential billing, in that only premium channels are required.
        v. All education customers get a 15% discount off the total calculated billing amount.

    6. Exit the program

❖ HINTS : For appending the data into default input file, you can use one dedicated output file stream variable for that purpose. Then use a second output file stream variable for writing the final results to the output file. Make sure you close out the file streams when you are done with them. Remember that you are reading data from the input file and by choosing option 'B' you are giving new information that will be stored in that input file. For processing the data from input file(after appending) write the results to a output file.

- Write all data to the output file, appending the information to the file for each input file processed.
- For the menu, you may implement any control structure you choose.
- You **must** implement the ***other*** control structure, for processing the customer data.
    - If your UIN is an odd number, you must implement a switch structure.
    - If your UIN is an even number - you must implement the if-else structure.

Instructions: Read this document completely before you begin work. Then, read and run the template source code file (**lab05_2016_F_LName.cpp**) and examine the source code and comments that are the hints to solve the problem. You should also, refer to the sample output on the following page as you read through the lab assignment.

- The program then writes the information and calculated values to the output file, including the original information read from the input, and the customers billing amount.
- The output written to the file **must be formatted as shown in** the **example output**.
- Format the output of decimal numbers to two decimal places.
- Write the output message to the screen as shown, and all other information is written to the output file named: **billingoutput.txt**

Update the preliminary comments at the top of the template file with your information. Then fill out the programmer information inside the main function to print on the console. Your Programmer Output should look like that shown in the example output on the following page, … but with your information filled in. This information is required on all lab assignments this semester. Save your source code file as **lab05_2016_F_LName.cpp**, replacing F and LName with your name before you submit it on Blackboard – or you will lose points on the lab.

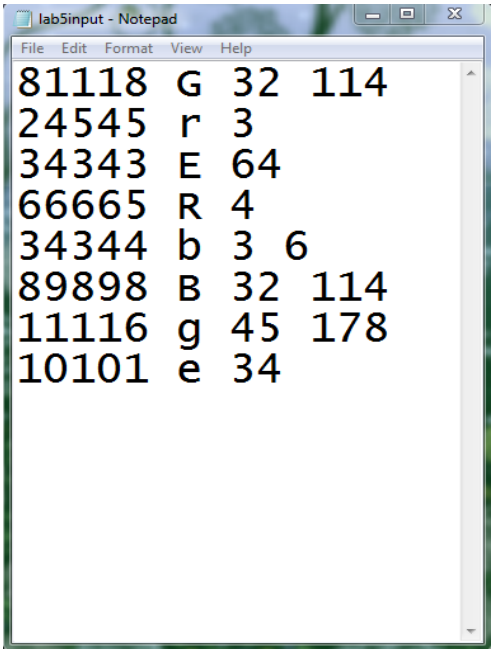
You will lose points for failing to do each or any of the following:

- Fill out the Preliminary Comments.
- Fill out the programmer info.
- Validate the opening of , and properly closing the input file stream properly
- Name your source code solution file properly.
- Implement the required control structure (switch or if-else), according to the above documentation.
- In your source code - be sure to fill in an updated program description, your name and UIN, and the TA info. Or lose 25 points.
- You are an awesome person. Thanks for reading all of this, and for all your work on these labs.

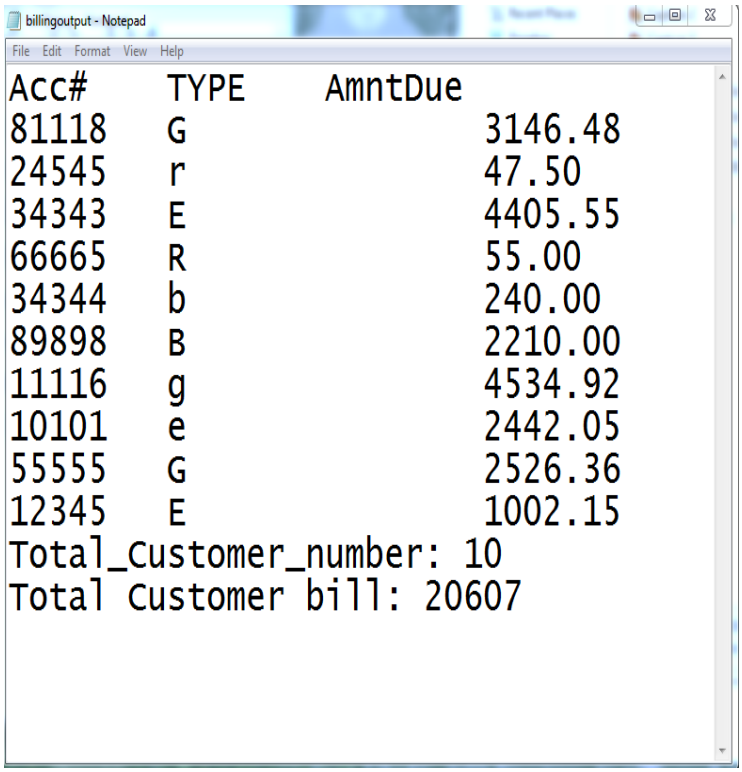
Your program should execute, and run properly to receive full credit. If your program doesn't run, it may not be graded. You may create your own additional input files for testing purposes, however you are not allowed to change the structure of the input files. Do not change the example input files provided.

Submit your properly named source code file on Blackboard, following the instructions of your lab TA.

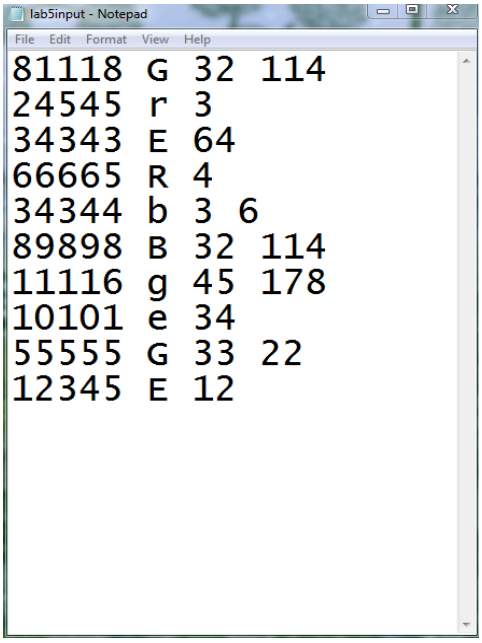
Sample input file before adding customers:
lab5input.txt



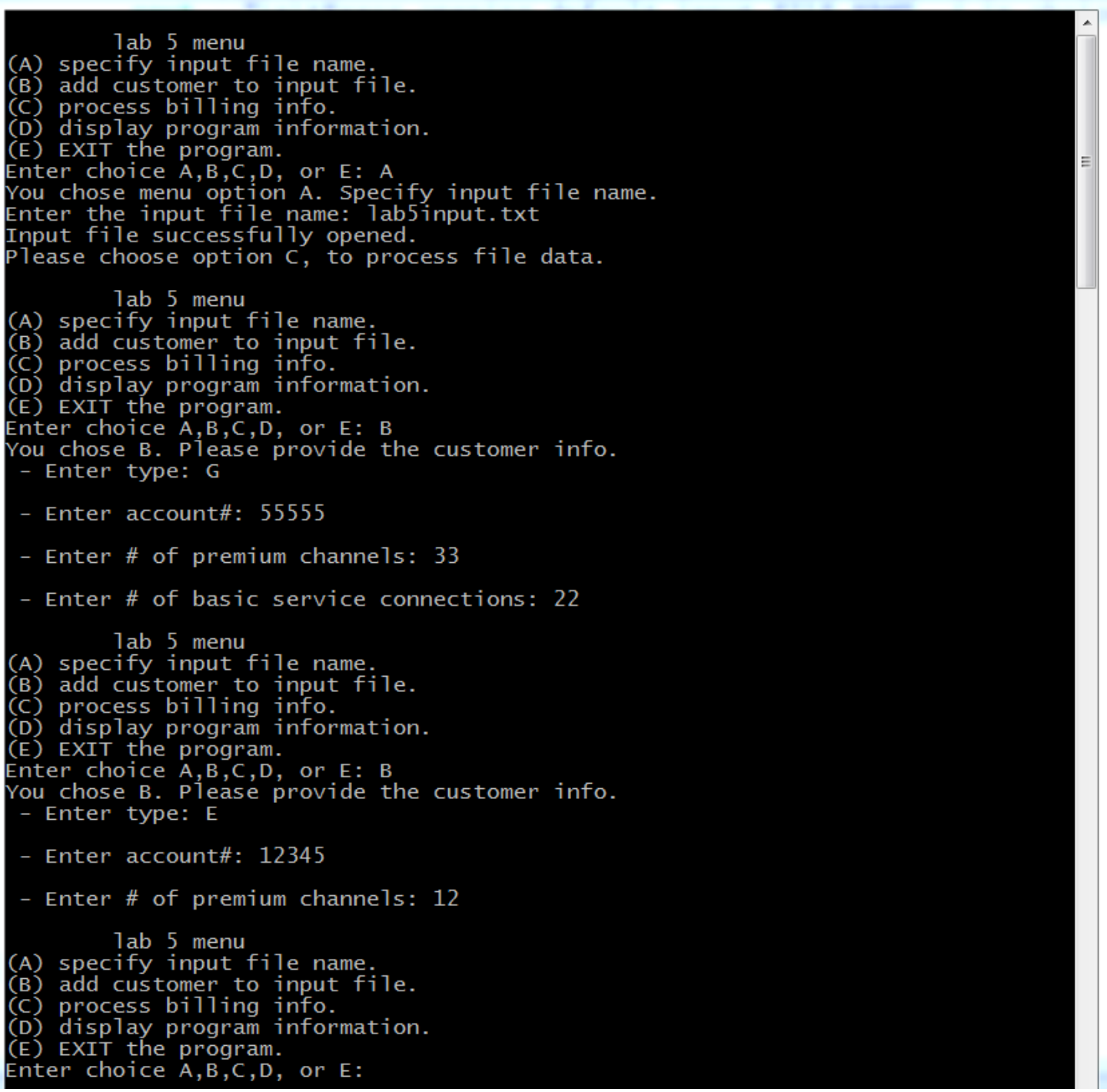
Sample output sent to the output file:
billingoutput.txt



Sample input file after adding customers:
lab5input.txt



Sample output sent to the **monitor:**



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        lab 5 menu
(A) specify input file name.
(B) add customer to input file.
(C) process billing info.
(D) display program information.
(E) EXIT the program.
Enter choice A,B,C,D, or E: A
You chose menu option A. Specify input file name.
Enter the input file name: lab5input.txt
Input file successfully opened.
Please choose option C, to process file data.

        lab 5 menu
(A) specify input file name.
(B) add customer to input file.
(C) process billing info.
(D) display program information.
(E) EXIT the program.
Enter choice A,B,C,D, or E: B
You chose B. Please provide the customer info.
 - Enter type: G

 - Enter account#: 55555

 - Enter # of premium channels: 33

 - Enter # of basic service connections: 22

        lab 5 menu
(A) specify input file name.
(B) add customer to input file.
(C) process billing info.
(D) display program information.
(E) EXIT the program.
Enter choice A,B,C,D, or E: B
You chose B. Please provide the customer info.
 - Enter type: E

 - Enter account#: 12345

 - Enter # of premium channels: 12

        lab 5 menu
(A) specify input file name.
(B) add customer to input file.
(C) process billing info.
(D) display program information.
(E) EXIT the program.
Enter choice A,B,C,D, or E:
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        lab 5 menu
(A) specify input file name.
(B) add customer to input file.
(C) process billing info.
(D) display program information.
(E) EXIT the program.
Enter choice A,B,C,D, or E: C
You chose menu option C.
 Input file successfully opened.

 ACCNUM:   81118
 type:   G


 ACCNUM:   24545
 type:   r


 ACCNUM:   34343
 type:   E


 ACCNUM:   66665
 type:   R


 ACCNUM:   34344
 type:   b


 ACCNUM:   89898
 type:   B


 ACCNUM:   11116
 type:   g


 ACCNUM:   10101
 type:   e

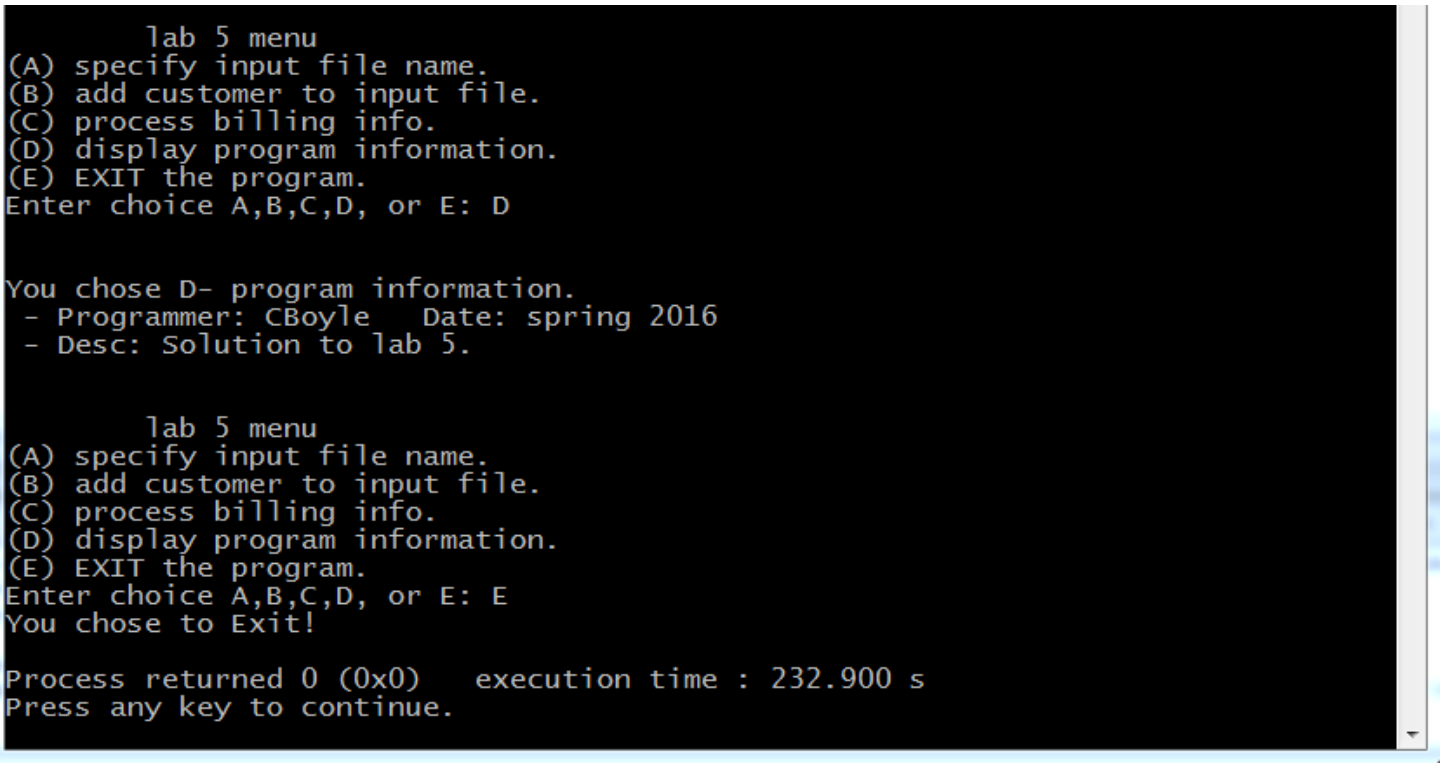

 ACCNUM:   55555
 type:   G


 ACCNUM:   12345
 type:   E

Total_Customer_number: 10

Total Customer bill: 20607

        lab 5 menu
(A) specify input file name.
(B) add customer to input file.
(C) process billing info.
(D) display program information.
(E) EXIT the program.
Enter choice A,B,C,D, or E: D
```



Lab Part B. Run all the source code examples provided for *CHAPTER 6* on our cs-150 website. Examine the source code, and read the comments. Make sure that you understand what is being demonstrated in each of these examples. Please ask questions in lecture, if you need help in understanding or working with these file