

Assignment 6

CS 135: Computer Science I

Spring 2008

Objectives

1. Learn and demonstrate use of **switch**, **if**, **else if**, and **else** statements in C++
2. Learn and demonstrate use of File I/O functions **open**, **good**, **close**
3. Learn and demonstrate use of relational operators in C++
4. Learn and demonstrate prototyping, defining, and calling simple value returning functions.

1 Restaurant Menu

Design, code, and test a C++ program **rest_menu.cpp** to display a restaurant menu, and process selections from a customer. The restaurant menu contains three main sections:

Main Selection Menu

1. **Appetizers**
2. **Main Entree**
3. **Desserts**

Each of the selections has individual items that are listed in 3 files, namely **appetizer.txt**, **main.txt** and **dessert.txt**.

You will ask the customer for their main selection. Based on what your customers selects (i.e., 1, 2, or 3), you will open the appropriate file and read the items from that file. For example, if the customer chooses to have a dessert, you will open the **dessert.txt** file, and display the choices for desserts. Other than the main selection menu, no food menu items may be coded into your program; they must come from the appropriate file.

Desert Selection Menu

1. **Brownie \$2.00**
2. **Scones \$3.00**
3. **Pie \$2.50**

The user will make a dessert selection by choosing 1, 2, or 3. The user's choice is printed out to the output file **receipt.txt**, and the price is updated.

You will also prompt the user to ask if s/he would like to give a Tip of 15%. If the user chooses to do so, you will update the total price. Finally, calculate taxes and give the user the grand total price. The tax rate in Northern Nevada is 7.3750%. This is a fixed value, so it should be declared as a constant as should the tip amount.

Your output text file should look something like this.

You selected Soup from the Appetizer menu

```
=====
Price $      5.00
  Tip $      0.75
Taxes $      0.36
=====
Total $      6.11
```

- Note that the prices are aligned, so format your output (`filePrintFormatted` functions are provided).
- The `filePrintFormatted` functions take the `ofstream` as a parameter and can write to the file associated with that stream. The file `testPrint.cpp` contains example usage for function calls for `filePrintFormatted`.
- If you choose to do so, you may use operations comparable to those in the `filePrintFormatted` functions to create your own functions that input items from files, and/or output items to files.
- Note that the menu items do not have a space; for example "TunaSandwich" in the main entrée cannot be written as two words for purposes of this exercise.

To make the lab simple, the choices are limited to three (3). You may have more than three selections, but if you do, be consistent for all the three food menu files. As mentioned above, sample files are provided with three food items in each of them.

Design your program such that it checks for incorrect input. Your program:

1. Should check for invalid choices, at the main menu and at the selected menu
2. Should check if the file exists, and that data is available

For this section of the assignment, create and run at least 6 test cases and make sure that your program handles these situations. These test cases should include the examples provided below.

1. Incorrect selection from main choices
2. Incorrect selection from the food items at the selected menu
3. File not found (temporarily remove the files from the directory)
4. One correct test case allowing the tip to be calculated
5. One correct test case not allowing the tip to be calculated
6. At least one more correct or incorrect test case

Test Examples:

Example 1(Correct Entry) - Console Action:

```
Welcome to The Virtual Street Cafe
-----
We have three main categories
1. Appetizer
2. Main Entree
3. Dessert

Enter your category selection: 1

Good Choice!

Here is the Appetizer menu
1. Salad $5.04
2. Soup $3.99
3. Fries $3.79

Enter your food selection: 2

You have selected Salad from the Appetizer menu
Your present total is: $5.04

Add 15% Tip? (y/n): y
Your total with tip is: $5.796

Your grand total with tax is: $6.1677

Thank you for choosing The Virtual Street Cafe.
Your Receipt is available at 'receipt.txt'.

Press any key to continue . . .
```

Example 1 (Correct Entry) - File Output Results:

```
You have chosen Salad from the Appetizer menu

=====
Price $      5.04
  Tips $      0.76
  Taxes $      0.37
=====
Total $      6.17

Thank you for choosing Virtual Street Cafe
```

Example 2 (Incorrect Entry) - Console Action:

```
Welcome to The Virtual Street Cafe
-----
We have three main categories
1. Appetizer
2. Main Entree
3. Dessert

Enter your category selection: 8

Selection 8 is not valid.
Incorrect selection - program exiting.
Press any key to continue . . .
```

Example 2 (Incorrect Entry) - File Output Results:

No file output for incorrect selection.

Example Case 3 (Incorrect Entry) - Console Action:

```
Welcome to The Virtual Street Cafe
-----
We have three main categories
1. Appetizer
2. Main Entree
3. Dessert

Enter your category selection: 2

Good Choice!

Here is the Main Entree menu
1. TunaSandwich $7.99
2. Pasta $8.99
3. RoastBeef $8.40

Enter your food selection: 500

Selection 500 is not valid.
Incorrect selection - program exiting.
Press any key to continue . . .
```

Example Case 3 (Incorrect Entry) - File Output Results:

No file output for incorrect selection.

Type the answer to the following question (handwritten answers will not be accepted):

1. Why can't you read two words for one entry? In other words, why did we have to use the words "TunaSandwich" instead of "Tuna Sandwich" in the input file?

2 Turning in your lab assignment

Turn in a Folder (Binder) containing:

- 1) Cover sheet with:
 - a) Assignment Number
 - b) Your Section Number
 - c) Your name and your email address
 - d) Your major* (*this is new - don't forget to do this)
 - e) Your TA's name
- 2) A CD or USB Memory stick with your name and section number written on the CD/USB stick. This rewritable CD/USB stick should contain:
 - a) Source code file: **rest_menu.cpp**
 - b) Executable file: **rest_menu.exe**
 - c) Output files for the two correct test cases
- 3) Paper printouts of the following:
 - a) Source code for **rest_menu.cpp**
 - b) The three input text files - **main.txt**, **dessert.txt**, **appetizer.txt**
 - c) Screen or text captures of the **rest_menu** program running
 - i) Identify and annotate each screen capture as needed
 - (1) Explain what input was used, and what the result was in a few sentences
 - ii) At least 6 different example test cases, as specified in the instructions
 - d) At least two output files, annotated with notes on what input was used, and what results occurred
 - e) Your printed answer to the question at the end of the laboratory

Note that all items specified in the list above are used to calculate your laboratory grade. It is best if you organize them well so that the TA can find everything and properly grade your work.

Ask your Instructor or TA if you have any questions.