

Assignment #02 (structs)

CL217-Object Oriented Programing - Lab

Due Date: 20th February 2020

Total Marks: 10

A note of warning: Start work on assignments as soon as they are given. Do not underestimate the demanding nature of this course. Expect the system to crash the night before your program is due. Aim to have it done the day before.

Submit the assignment on [slate](#). Do not email me assignments after due date. It will not be accepted in any case. **Students are required to submit actual content written in MS word or Pdf. Hand written/ Scanned assignments will not be accepted.**

Note: Name of the file should start with your Roll number followed by your Name and at the end assignment number (**p190001NameAssign01**)

Q # 1.

Write a program whose main function is merely a collection of variable declarations and function calls. This program reads a text and outputs the letters, together with their counts, as explained below in the function `printResult`. (There can be no global variables! All information must be passed in and out of the functions. Use a structure to store the information.)

Your program must consist of at least the following functions:

- Function `openFile`: Opens the input and output files. You must pass the file streams as parameters (by reference, of course). If the file does not exist, the program should print an appropriate message and exit. The program must ask the user for the names of the input and output files.
- Function `count`: Counts every occurrence of capital letters A-Z and small letters a-z in the text file opened in the function `openFile`. This information must go into an array of structures. The array must be passed as a parameter, and the file identifier must also be passed as a parameter.
- Function `printResult`: Prints the number of capital letters and small letters, as well as the percentage of capital letters for every letter A-Z and the percentage of small letters for every letter a-z. The percentages should look like this: "25%". This information must come from an array of structures, and this array must be passed as a parameter.

Q # 2.

Write a program to help a local restaurant automate its breakfast billing system. The program should do the following:

- a. Show the customer the different breakfast items offered by the restaurant.
- b. Allow the customer to select more than one item from the menu.
- c. Calculate and print the bill.

Assume that the restaurant offers the following breakfast items (the price of each item is shown to the right of the item):

Plain Egg	\$1.45
Bacon and Egg	\$2.45
Muffin	\$0.99
French Toast	\$1.99
Fruit Basket	\$2.49
Cereal	\$0.69
Coffee	\$0.50
Tea	\$0.75

Use an array, `menuList`, of the struct `menuItem`, as defined in Programming Exercise 2. Your program must contain at least the following functions:

- Function `getData`: This function loads the data into the array `menuList`.
- Function `showMenu`: This function shows the different items offered by the restaurant and tells the user how to select the items. 646 | Chapter 11: Records (structs)

- Function printCheck: This function calculates and prints the check. (Note that the billing amount should include a 5% tax.)

A sample output is:

```
Welcome to Johnny's Restaurant
Bacon and Egg      $2.45
Muffin             $0.99
Coffee             $0.50
Tax                $0.20
Amount Due $4.14
```

Q # 3.

Implement the given nested structure in the following figures. Note: Only write the definitions of structs nothing else. It is not a complete program.

