Problem Sheet on Structures

1. Enter your the marks of students in Chemistry, Mathematics and Physics (each out of 100) using a structure named Marks having elements roll no., name, chem_marks, maths_marks and phy_marks and then display the your percentage. Try to enhance the same program to enter the marks of 5 students and display their percentage.

2. Create a structure with the following fields: Name, Designation, Department, Basic salary . Write a program that checks the following constraints and print the results.
   i) if designation is Secretary/additional secretary air travel is allowed
   ii) if designation is Joint Secretary/Deputy secretary air travel is allowed if salary is above Rs.20,000.
   iii) if designation is Under Secretary air travel is allowed only if the department is "Marketing" .

3. A point in a plane can be represented by its two coordinates x and y. Create a structure to represent the point and write a function that accepts the structure and returns an integer (1, 2, 3,4) that indicates in which quadrant the point is located.
4. Write a structure to store the name, account number and balance of customers (more than 5) and store their information.
   a) Write a function to print the names of all the customers having balance less than Rs.200.
   b) Write a function to add Rs.100 in the balance of all the customers having more than Rs.1000 in their balance and then print the incremented value of their balance.
5. Write a structure to store the roll no., name, age (between 17 to 21) and address of students (more than 5). Store the information of the students.
   1 - Write a function to print the names of all the students having age 17.
   2 - Write another function to print the names of all the students having even roll no.
   3 - Write another function to display the details of the student whose roll no is given (i.e. roll no. entered by the user).
6. Write a structure to store the names, Date of Join, salary and hours of work per day of 10 employees in a company. Write a program to increase the salary depending on the Years of experience and number of hours of work per day as follows and then print the name of all the employees along with their final salaries.

Years of Experiance	<5	5-10	>10
Hours of work per day	8	10	>=12
Increase in salary	Rs.50	Rs.100	Rs.150

Note: Date of Join should be a nested structure.

Years of experience should be calculated with current date

Additional Problems

1. 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 menuItemType,
    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.

    • 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

    Format your output with two decimal places. The name of each item in the output must be left justified. You may assume that the user selects only one item of a particular type.

The customer can select multiple items of a particular type. A sample output in this case is:

Welcome to Johnny's Restaurant
1 Bacon and Egg $2.45
2 Muffin $1.98
1 Coffee $0.50
Tax $0.25
Amount Due $5.18

2. Create a Library Management System. Create a structure containing book information like accession number, name of author, book title and flag to know whether book is issued or not.
   Create a menu in which the following can be done.
   1-Display book information
   2 - Add a new book
   3 - Display all the books in the library of a particular author
   4 - Display the number of books of a particular title
   5 - Display the total number of books in the library
   6 - Issue a book
   (If we issue a book, then its number gets decreased by 1 and if we add a book, its number gets increased by 1)