

## Practice Lab Assignment 2

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For this Practice Lab Assignment, you will write programs in C implementing the concepts of Structures and Recursion.

#### Instructions

- There are 7 questions in this assignment.
- Any discussion with neighbor/or any other student is strictly not allowed.
- Mobile phones are not allowed. If found, disciplinary action may be taken.

**Due Date: As notified on BB.**

#### Grading Criteria

No Grading Criteria.

### Programming Questions

1. Create a structure to specify data of students given below: Roll number, Name, Department, Course, and Year of joining.

Assume that there are not more than 450 students in the college.

- (a) Write a function to print names of all students who joined in a particular year.
- (b) Write a function to print the data of a student whose roll number is given.

*\*Test your program for a small input.*

2. Create a structure to specify data of customers in a bank. The data to be stored is: Account number, Name, Balance in account.

Assume maximum of 200 customers in the bank.

- (a) Write a function to print the Account number and name of each customer with balance below Rs. 100.
- (b) If a customer request for withdrawal or deposit, it is given in the form: Acct. no, amount, code (1 for deposit, 0 for withdrawal)

Write a program to give a message, “The balance is insufficient for the specified withdrawal”.

***\*Test your program for a small input.***

3. There is a structure called **employee** that holds information like employee code, name, date of joining. Write a program to create an array of the structure and enter some data into it. Then ask the user to enter current date. Display the names of those employees whose tenure is 3 or more than 3 years according to the given current date.
4. Write a program that compares two given dates. To store date use structure say **date** that contains three members namely date, month and year. If the dates are equal then display message as "Equal" otherwise "Unequal".
5. Write a menu driven program that depicts the working of a library. The menu options should be:
  1. Add book information
  2. List all books of given author
  3. List the count of books in the library
  4. List the books in the order of accession number
  5. Exit

Create a structure called **library** to hold accession number, title of the book, author name, price of the book, and flag indicating whether book is issued or not.

***\*Test your program for a small input.***

6. Write a recursive program to compute the sum of the series  $(m)^2 + (m+1)^2 + (m+2)^2 + \dots + (n)^2$  and test it with  $m=2$  and  $n=6$ .
7. Multiplication of two numbers can be carried out by repetitive addition, for example multiplying 12 by 9 can be done by adding 12 nine times ( $12+12+12+\dots+12$ ). Write a recursive function which takes two numbers **a** and **b** from the main program, and implements multiplication by repetitive addition.