

CSL 201: DATA STRUCTURES LAB

C-PROGRAMMING REVISION

Revise the below given topics and write the programs for given questions.

1. Control Structures
2. Arrays
3. Strings
4. Structures
5. Functions
6. Pointers

Programming questions

1. Write a program in C to find the maximum and minimum elements in an array.
2. Given an array of numbers, write a program in C to separate odd and even integers into separate arrays.
3. Write a C program to accept a 2-D integer matrix and do the following:
 - a) Check whether it is symmetric or not (A matrix 'A' is symmetric if $A=A^T$).
 - b) Display upper triangular elements, lower triangular elements and diagonal elements, if the input is a square matrix.
4. Write a program to generate the following pattern
1
1 2
1 2 3
1 2 3 4
5. Write a menu driven program to find the area of square, triangle, circle and rectangle according to the choice given.
6. Write a program in C to count the total number of words in a string.
7. Given a string s, write a C program to find the length of the longest substring without repeating characters. Also display the substring.

Example:

Input: s = "abcabcbb"

Output: 3, abc

Explanation: The answer is "abc", with the length of 3.

8. Write a C program to define a structure CUSTOMER with fields name (first name, middle name, last name), accNo, accType and balance. accType can be SB , FD or CURR. Input the details of n customers.

Implement functions for the following:

- a) Search for a particular customer based on accNo
 - b) Retrieve the balance of a customer whose accNo is specified
 - c) Display a list of customers sorted in the alphabetical order of their first name
 - d) List the name, accNo and balance of all cutomers whose account type is FD
9. Given an array of numbers, write a C program to implement following using pointers. Each operation must be implemented as a separate function:
- a) Compute the sum of all elements in an array.
 - b) Print the elements of an array in reverse order.
 - c) Sort the array in descending order
10. Write a program to read and store the details (the name, employee code and salary) of 'n' employees in a company into a file using structure. Using an user defined function , print the details of the employee whose employee code is given as input. Use pass by reference.