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|  | A1 | Write C/C++ program to store marks scored for first test of subject 'Data Structures and Algorithms' for N students. Compute   1. The average score of class 2. Highest score and lowest score of class 3. Marks scored by most of the students 4. list of students who were absent for the test |
|  | A2 | An m x n *matrix* is said to have a saddle point if some entry *a[i][j]* is the smallest value in row *i* and the largest value in *j.* Write C/ C++ function that determines the location of a saddle point if one exists. |
|  | A3 | Write C++ program for string operations- copy, concatenate, check substring, equal, reverse and length |
|  | B1 | Department of Computer Engineering has student's club named 'Pinnacle Club'. Students of Second, third and final year of department can be granted membership on request. Similarly one may cancel the membership of club. First node is reserved for president of club and last node is reserved for secretary of club. Write C++ program to maintain club member‘s information using singly linked list. Store student PRN and Name. Write functions to   1. Add and delete the members as well as president or even secretary. 2. Compute total number of members of club 3. Display members 4. Display list in reverse order using recursion |
|  | B1 | Department of Computer Engineering has student's club named 'Pinnacle Club'. Students of Second, third and final year of department can be granted membership on request. Similarly one may cancel the membership of club. First node is reserved for president of club and last node is reserved for secretary of club. Write C++ program to maintain club member‘s information using singly linked list. Store student PRN and Name. Write functions to   1. Add and delete the members as well as president or even secretary. 2. Compute total number of members of club 3. Display members 4. Two linked lists exist for two divisions. Concatenate two lists. |
|  | B2 | Second year Computer Engineering class, set A of students like Vanilla Ice-cream and set B of students like butterscotch ice-cream. Write C/C++ program to store two sets using linked list. compute and display-   1. Set of students who like both vanilla and butterscotch 2. Set of students who like only butterscotch not vanilla 3. Number of students who like neither vanilla nor butterscotch |
|  | B2 | Second year Computer Engineering class, set A of students like Vanilla Ice-cream and set B of students like butterscotch ice-cream. Write C/C++ program to store two sets using linked list. compute and display-   1. Set of students who like either vanilla or butterscotch or both 2. Set of students who like both vanilla and butterscotch 3. Set of students who like only vanilla not butterscotch |
|  | B3 | Write C++ program for storing binary number using doubly linked lists. Write functions- a)to compute 1‘s and 2‘s complement b) add two binary numbers |
|  | C1 | A palindrome is a string of character that‘s the same forward and backward. Typically, punctuation, capitalization, and spaces are ignored. For example, ‖Poor Dan is in a droop‖ is a palindrome, as can be seen by examining the characters ―poor danisina droop‖ and observing that they are the same forward and backward. One way to check for a palindrome is to reverse the characters in the string and then compare with them the original-in a palindrome, the sequence will be identical. Write C++ program with functions-   1. To check whether given string is palindrome or not that uses a stack to determine whether a string is a palindrome. 2. to remove spaces and punctuation in string, convert all the Characters to lowercase, and then call above Palindrome checking function to check for a palindrome 3. to print string in reverse order using stack |
|  | C2 | Implement C++ program for expression conversion as infix to postfix using stack based on given conditions   1. Operands and operator, both must be single character. 2. Only '+', '-', '\*' and '/ ' operators are expected. |
|  | C2 | Implement C++ program for postfix evaluation using stack based on given conditions   1. Operands and operator, both must be single character. 2. Input Postfix expression must be in a desired format. 3. Only '+', '-', '\*' and '/ ' operators are expected. |
|  | D1 | Queues are frequently used in computer programming, and a typical example is the creation of a job queue by an operating system. If the operating system does not use priorities, then the jobs are processed in the order they enter the system. Write C++ program for simulating job queue. Write functions to add job and delete job from queue. |
|  | D2 | A double-ended queue(deque) is a linear list in which additions and deletions may be made at either end. Obtain a data representation mapping a deque into a one-dimensional array. Write C++ program to simulate deque with functions to add and delete elements from either end of the deque. |
|  | E1 | Write C++ program to maintain club members, sort on roll numbers in ascending order. Write function ‗Ternary\_Search‘ to search whether particular student is member of club. Ternary search is modified binary search that divides array into 3 halves instead of two. |
|  | E2 | Write C++ program to store first year percentage of students in array. Write function for sorting array of floating point numbers in ascending order using  a)Selection Sort b) Bubble sort and display top five scores. |
|  | E3 | Write C++ program to store first year percentage of students in array. Sort array of floating point numbers in ascending order using quick sort and display top five scores. |