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| 1.   | Write a C++ programme that uses function template  |          |      |
|      | to perform the following.  |          |      |
|      | i. Search for a key element in a list of elements  |          |      |
|      | using linear search.   |          |      |
|      | ii. Search a key element in a list of sorted   |          |      |
|      | elements using binary search.  |          |      |
| 2.   | Write a C++ programme that implements Insertion  |          |      |
|      | sort to arrange a list of integers in ascending order.                                     |          |      |
| 3.   | Write a template based C++ programme that  |          |      |
|      | implements selection sort to arrange a list of   |          |      |
| 4.   | elements in descending order.  |          |      |
| 4.   | Write a template based C++ programme that implements insertion sort to arrange a list of   |          |      |
|      | elements in descending order.  |          |      |
|      | ciements in descending order.  |          |      |
| 5.   | Write a template based C++ programme that  |          |      |
|      | implements Quick sort to arrange a list of elements  |          |      |
|      | in ascending order.  |          |      |
| 6.   | Write a C++ programme that implement Merge sort  |          |      |
|      | algorithm for sorting a list of integers in ascending                                      |          |      |
| 7.   | order  |          |      |
| /.   | Write a menu driven C++ programme to do following operations on two dimensional array A of |          |      |
|      | size m x n. You should use user-defined functions  |          |      |
|      | which accept 2-D array A, and its m and n  |          |      |
|      | arguments. The options are:  |          |      |
|      | i. To input elements into matrix of size m x n   |          |      |
|      | ii. To display elements of matrix of size m x n  |          |      |
|      | iii. To display sum of all elements of matrix of   |          |      |
|      | size m x n   |          |      |
|      | iv. To display row-wise sum of matrix of size m  |          |      |
|      | x n  |          |      |
|      | v. To display column-wise sum of matrix of size  |          |      |
|      | m x n  |          |      |
|      | vi. To display diagonal-wise sum of matrix of  |          |      |
|      | size n x m   |          |      |
| 8.   | Write a programme to multiply array A and B of   |          |      |
|      | order N x L and L x M  |          |      |
| 9.   | Write a C++ programme that uses functions to   |          |      |
|      | perform the following:   |          |      |
|      | a. Create a singly linked list of integers.  |          |      |
|      |  |          |      |

| b. Delete a given integer from the above linked list. c. Display the contents of the above list after deletion.  Write a template based C++ programme that uses functions to perform the following: a. Create a doubly linked list of integers. b. Delete a given integer from the above doubly linked list. c. Display the contents of the above list after deletion.  Write a C++ programme that uses functions to perform the following i. Create a binary search tree of integers ii. Traverse the above binary search tree non recursively in inorder.  Write a C++ programme that uses functions to perform the following i. Create a binary search tree of characters iii. Traverse the above binary search tree recursively in preorder, inorder and postorder.  Write a C++ programme that uses stack operations to convert a given infix expression into its postfix equivalent, implementing the stack using an array.  Design, Develop and Implement a menu driven programme in C++ for the following operations on STACK of characters (Array Implementation of Stack with Maximum size MAX) a. PUSH an element from STACK b. POP an element from STACK c. Demonstrate Overflow and Underflow condition on STACK d. Exit Support the programme with appropriate functions for each of the operations  Design, develop and implement a menu driven programme in C++ for the following operations on QUEUE of characters (array implementation of Onene with maximum size MAX) |     |   |   |   |
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| functions to perform the following:  a. Create a doubly linked list of integers.  b. Delete a given integer from the above doubly linked list.  c. Display the contents of the above list after deletion.  11. Write a C++ programme that uses functions to perform the following  i. Create a binary search tree of integers ii. Traverse the above binary search tree non recursively in inorder.  12. Write a C++ programme that uses functions to perform the following  i. Create a binary search tree of characters ii. Traverse the above binary search tree recursively in preorder, inorder and postorder.  13. Write a C++ programme that uses stack operations to convert a given infix expression into its postfix equivalent, implementing the stack using an array.  14. Design, Develop and Implement a menu driven programme in C++ for the following operations on STACK of characters (Array Implementation of Stack with Maximum size MAX)  a. PUSH an element on to STACK b. POP an element from STACK c. Demonstrate Overflow and Underflow condition on STACK d. Exit Support the programme with appropriate functions for each of the operations  15. Design, develop and implement a menu driven programme in C++ for the following operations on QUEUE of characters (array implementation of  |     | list. c. Display the contents of the above list after   |   |   |
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| Queue with maximum size in it?  | 15. | programme in C++ for the following operations on  |   |   |
| a. Insert an Element on to Queue  |     | I .   | 1 | Ī |

|     | b. Delete an Element from Queue c. Demonstrate Overflow and Underflow situation on QUEUE d. Display the status of Queue   |
|-----|---|
|     | e. Exit Support the program with appropriate  |
|     | functions for each of the above operations.   |
| 16. | Design, develop and implement a menu driven programme in C++ for the following operations on Circular QUEUE of characters (array implementation of Queue with maximum size MAX)   |
|     | <ul> <li>a. Insert an Element on to Circular Queue</li> <li>b. Delete an Element from Circular Queue</li> <li>c. Demonstrate Overflow and Underflow situation on Circular QUEUE</li> <li>d. Display the status of Circular Queue</li> <li>e. Exit Support the program with appropriate functions for each of the above operations.</li> </ul> |
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