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| 1 | Consider the student database of N students and their marks. Make use of a hash table implementation to quickly insert and lookup students' PNR and marks. Implement collision handling techniques- linear probing with chaining without replacement.  Test case:  Create a hash table of size 10.  1. Linear probing with chaining without replacement: Insert the following PNR: (31,13,14,51,16,71,48,19) |
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| 2 | This program first reads words from a dictionary file and inserts them into a hash table.  The dictionary file consists of a list of more than 20 correctly spelled lowercase words, separated by whitespace. The words are inserted into the hash table. Handle collision using separate chaining. After the reading of the dictionary file is complete, the program prompts the user for input. After input is obtained, each word that the user enters into the program is looked up within the hash table to see if it exists. If the user entered word exists within the hash table, then that word is spelled correctly. |
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| 3 | Write a C++ program to construct a binary search tree with n nodes and implement the following operations  a.Insert a node b. all traversals c. Create a clone of a tree and then erase all nodes in the original tree. |
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| 4 | Write a C++ program to construct binary search tree with n nodes and implement the following operations  a. Insert a node b. all traversals c. find the height of a tree. d. find mirror image of a tree |
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| 5 | Write a C++ program to construct binary search tree with n nodes and implement the following operations   1. Insert a node b. all traversals (recursive and nonrecursive) |
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| 6 | Write a C++ program to construct binary search tree with n nodes and implement following operations  a. Insert a node b. all traversals c. delete a node |
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| 7 | Write a C++ program to inorder threaded binary search tree with n nodes and implement following operations 1.Insert a new node 2. Inorder traversal |
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| 8 | Write a program to convert given binary search tree into inorder threaded binary search tree and its inorder traversal |
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| 9 | Write a C++ program to implement Huffman coding text compression algorithm. Build the Huffman Tree using characters and their frequencies input from user. Encode a given string by using codes generated from Huffman tree and decode the bit sequence entered by the user  Test case:  Character and frequency: a-1, b-2, c-3,d-4,e-5,f-6,g-7,h-8 |
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| 10 | You have a business with several offices; you want to lease phone lines to connect them up  with each other; and the phone company charges different amounts of money to connect  different pairs of cities. You want a set of lines that connects all your offices with a minimum  total cost. Solve the problem by suggesting appropriate data structures (Prim’s algorithm)  Test case:  http://d1hyf4ir1gqw6c.cloudfront.net/wp-content/uploads/Fig-11.jpg |
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| 11 | You have a business with several offices; you want to lease phone lines to connect them up  with each other; and the phone company charges different amounts of money to connect  different pairs of cities. You want a set of lines that connects all your offices with a minimum  total cost. Solve the problem by suggesting appropriate data structures (Kruskal’s algorithm)  http://d1hyf4ir1gqw6c.cloudfront.net/wp-content/uploads/Fig-11.jpg |
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| 12 | Implement Dijkstra’s algorithm for shortest path between a given pair of vertices.  Test your program for following example:  Input graph:  http://d1hyf4ir1gqw6c.cloudfront.net/wp-content/uploads/Fig-11.jpg |
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| 13 | Given a directed acyclic graph, a. write a program for topological ordering of vertices b. DFS traversal  Test case: |
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| 14 | Write a C++ program to construct AVL Tree. Implement following operations.  a.Insert b. level order traversal c. Print height of tree  Test your program for following example:  Input : 30,31,32,23,22,28,24,29,26,27 |
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| 15 | Given sequence k = k1<; k2<..... kn of n sorted keys, with a search probability pi for each  key ki . Build the Binary search tree that has the least search cost given the access probability  for each key. Display weight matrix, cost matrix and root matrix.  test your program for following example:  k1=do, k2=if, k3=read, k4= while  p1 = 1, p2 = 3, p3 = 1, p4 = 3  q0 = 1, q1 = 2, q2 = 1, q3= 1, q4 = 3 |
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| 16 | Read the marks obtained by students in an online examination of a particular subject.  a)Find the minimum and maximum marks obtained in that subject Use the heap data structure. Analyse the algorithm.  b) sort the marks in descending order using heapsort . |
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| 17 | Department maintains student information. the file contains rollno, name, division, and address. Allow user to add, delete, insert and search information of student. use sequential file to maintain the data |
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| 18 | Write a C++ program to construct binary search tree with n nodes and implement following operations:  Insert a node b. all traversals (recursive and nonrecursive) c: Construct Tree from given Inorder and Preorder traversals  Inorder: 2, 3, 4, 6, 7, 9, 13, 15, 17, 18, 20  Preorder: 15,6,3,2,4,7,13,9,18,17,20 |
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| 19 | Write a C++ program to construct binary search tree with n nodes and implement following operations   * 1. Insert a node b. all traversals c. Check whether two trees are equal. |
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| 20 | Write a program to represent input graph using adjacency matrix. Implement Depth First and Breadth first traversal algorithms. Check if graph is connected, if not find how many connected components it has. |
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| 21 | Given a directed acyclic graph, a. write a program for topological ordering of vertices b. BFS traversal:  Test case: |
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| 22 | Consider the student database of N students and their marks. Make use of a hash table implementation to quickly insert and lookup students' PNR and marks. Implement collision handling techniques- linear probing with chaining with replacement  Test case :  Create a hash table of size 10.  Linear probing with chaining with replacement: Insert the following PNR: (11, 21,31,34,55,52,33) |