| Sr. No. | Experiment Names |
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| | **Group A** |
| 1. | Consider telephone book database of N clients. Make use of a hash table implementation to quickly look up client's telephone number. Make use of two collision handling techniques and compare them using number of comparisons required to find a set of telephone numbers. |
| 2. | Implement all the functions of a dictionary (ADT) using hashing and handle collisions using chaining with / without replacement.<br>Data: Set of (key, value) pairs, keys are mapped to values, keys must be comparable, keys must be unique.<br>Standard operations: insert (key, value), Find (key), Delete (key). |
| | **Group B** |
| 3. | A book consists of chapters, chapters consist of sections and sections consist of subsections. Construct a tree and print the nodes. Find the time and space requirements of your method. |
| 4. | Beginning with an empty binary search tree, Construct binary search tree by inserting the values in the order given. After constructing a binary tree –<br>I)Insert new node, ii) Find number of nodes from longest path from root, iii) Minimum data value found in the tree, iv) change a tree so that the roles of the left & right pointers are swapped at every node, v) search a value. |
| 5. | Construct an expression tree from the given prefix expression eg. +--a*bc/def and traverse it using post order traversal (non recursive) and then delete the entire tree. |
| | **Group C** |
| 6. | Represent a given graph using adjacency matrix/list to perform DFS and using adjacency list to perform BFS. Use the map of the area around the college as the graph. Identify the prominent land marks as nodes and DFS & BFS on that. |
| 7. | There are flight paths between cities. If there is a flight between city A and city B then there is an edge between the cities. The cost of the edge can be the time that flight take to reach city B from A, or the amount of fuel used for the journey. Represent this as a graph. The node can be represented by airport name or name of the city. Use adjacency list representation of the graph or use adjacency matrix representation of the graph. Check whether the graph is connected or not. Justify the storage representation used. |
| | **Group D** |
| 8. | 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? |
| | **Group E** |
| 9. | Implement the Heap/Shell sort algorithm implemented in Java demonstrating heap/shell data structure with modularity of programming language. |
| 10. | Read the marks obtained by students of second year in an online examination of particular subject. Find out maximum and minimum marks obtained in that subject. Use heap data structure. Analyze the algorithm. |
| | **Group F** |
| 11. | Department maintains a student information. The file contains roll number, name, division and address. Allow user to add, delete information of student. Display information of particular employee. If record of student does not exist an appropriate message is displayed. If it is, then the system displays the student details. Use sequential file to main the data. |
| 12. | **Mini Project** |