MIT Academy Of Engineering

Department Of Computer Engineering

Class: SE

Course: Advanced Data Structures Lab

1. 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.
2. A Dictionary stores keywords & its meanings. Provide facility for adding new keywords, deleting keywords, updating values of any entry. Provide facility to display whole data sorted in ascending/ Descending order. Also find how many maximum comparisons may require for finding any keyword. Use Binary Search Tree for implementation.
3. Write a function to get the number of vertices in an undirected graph and its edges. You may assume that no edge is input twice. i. Use adjacency list representation of the graph and find runtime of the function. ii. Use adjacency matrix representation of the graph and find runtime of the function
4. 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.
5. Consider telephone book database of N clients. Make use of a hash table implementation to quickly look up client‘s telephone number.
6. Implement all the functions of a dictionary (ADT) using hashing.Data: Set of (key, value) pairs, Keys are mapped to values, Keys must be comparable, Keys must be uniqueStandard Operations: Insert(key, value), Find(key), Delete(key)
7. 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.