PUNE INSTITUTE OF COMPUTER TECHNOLOGY

DHANKAWADI, PUNE – 43.

LIST OF LAB EXPERIMENTS

ACADEMIC YEAR: 2019-2020

DEPARTMENT: COMPUTER ENGINEERING **Date: 16/12/2019**

CLASS: S.E. **SEMESTER: II**

SUBJECT: 210256-Advanced Data Structures Lab

Assign-ment No.	PROBLEM STATEMENT
	Group A
1	Given binary tree with n nodes and perform following operations on it. a) Assign this tree to another [operator=] b) Erase all nodes in a binary tree c) Create a mirror image of the tree d) Check two binary trees are equal or not e) Inorder, Preorder, Postorder traversal of tree(recursive and non-recursive) f) Print internal and leaf nodes
2	A Dictionary stores keywords & its meanings. Provide facility for adding new keywords, deleting keywords, updating values of any entry, assign a given tree into another tree (=). 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	Create inorder threaded binary tree and perform inorder, preorder traversal.
	Group B
4	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 takes 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. (Operation to be performed adding and deleting edge, adding and deleting vertices, calculated in-degree and out-degree for directed graph. Use any traversal to traverse graph)
5	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 Prims or Kruskal using adjacency matrix.
	Group C
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 unique Standard Operations: Insert(key, value), Find(key), Delete(key) (Use linear probing with and without replacement. Calculate the average search cost for both.)
7	The symbol table is generated by compiler. From this perspective, the symbol table is a set of name-attribute pairs. In a symbol table for a compiler, the name is an identifier, and the attributes might include an initial value and a list of lines that use the identifier. Perform the following operations on symbol table: a) Determine if a particular name is in the table b) Retrieve the attributes of that name c) Modify the attributes of that name d) Insert a new name and its attributes e) Delete a name and its attributes (Use chaining with replacement and without replacement)
	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. OR 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 Height balance tree and find the complexity for finding a keyword.
	Group E
9	To create ADT that implements the SET concept.(Use array/linked list to implement SET) a)Add (newElement) -Place a value into the set b)Remove (element) Remove the value c) Contains (element) Return true if element is in collection d)Size () Return number of values in collection Iterator () Return an iterator used to loop over collection e)Intersection of two sets,

	f)Union of two sets, g) Difference between two sets, h) Subset
	Group F
10	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.
	Group G
11	Write a Java program which will demonstrate a concept of Interfaces and packages: In this assignment design and use of customized interfaces and packages for a specific application are expected.
12	Write a program on template and exception handling in Java: in this assignment multiple templates are to be designed as a pattern and these patterns to be used to take decisions
13	Write a Java program for the implementation of different data structures using JAVA collection libraries (Standard toolkit library): at least 5 data structures are used to design a suitable application.

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