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Sub:	DATA STRUCTURES AND APPLICATIONS					Sub Code:	BCS304
Date:		Duration:	90 minutes	Max Marks:	50	Sem/Sec: III A,B,C	

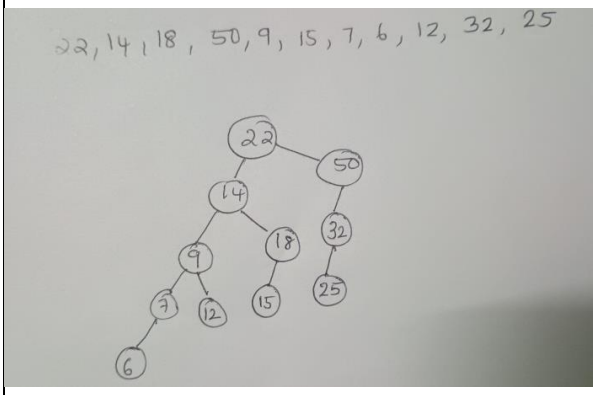
Scheme and Solutions

1 a

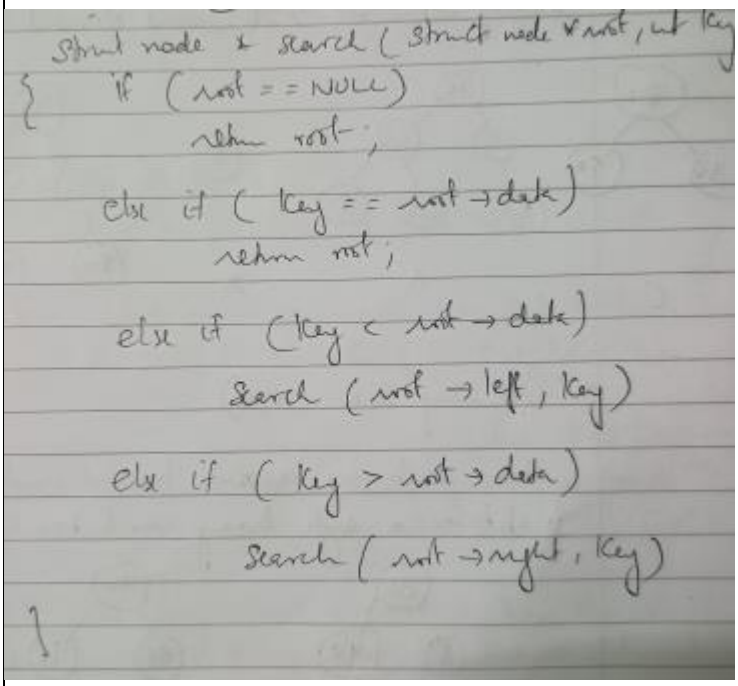
Construct a binary search tree for the inputs 22, 14, 18, 50, 9, 15, 7, 6, 12, 32, 25 also write a function in C to search an item in the BST.

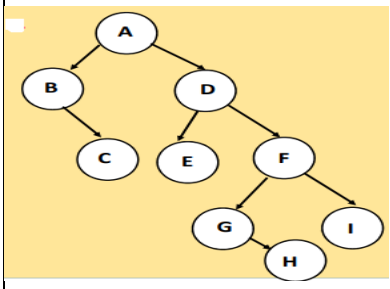
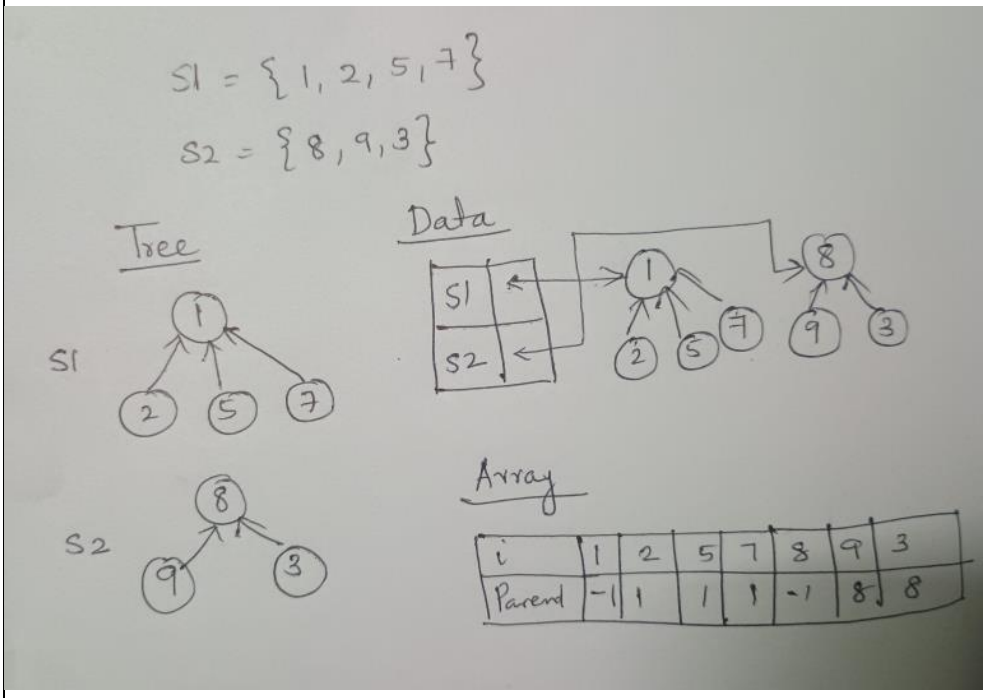
Answer:

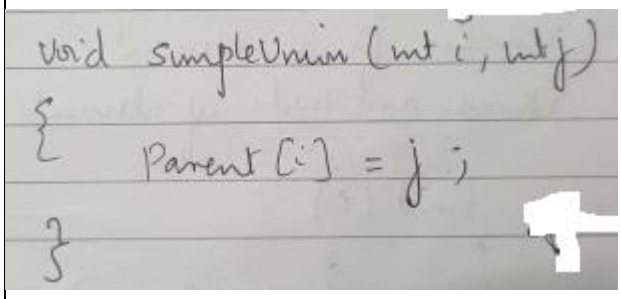
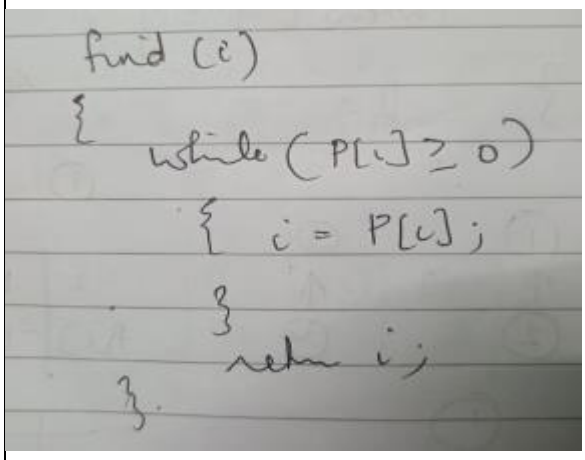
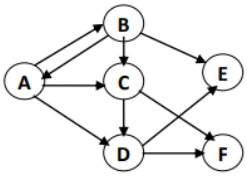
Construction of BST-3M(step wise)

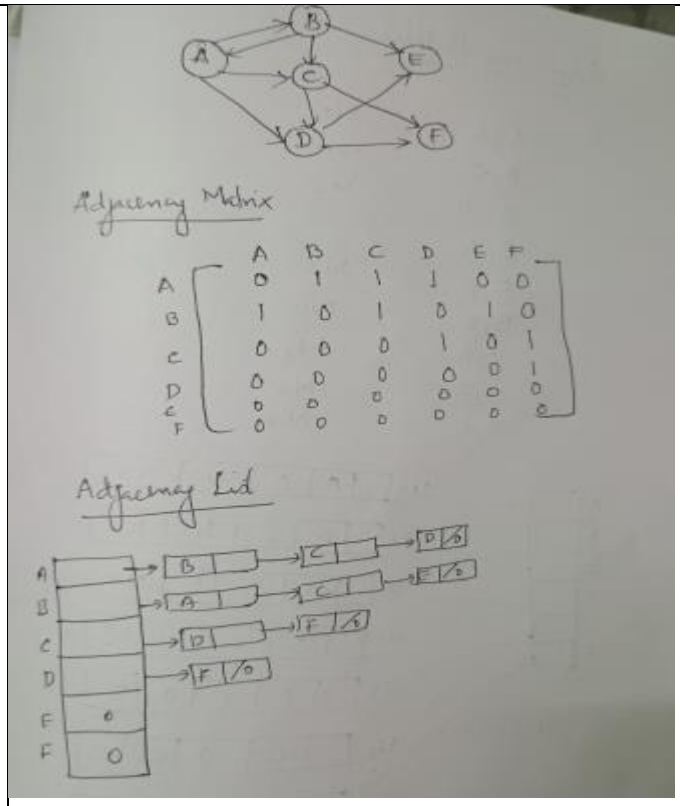


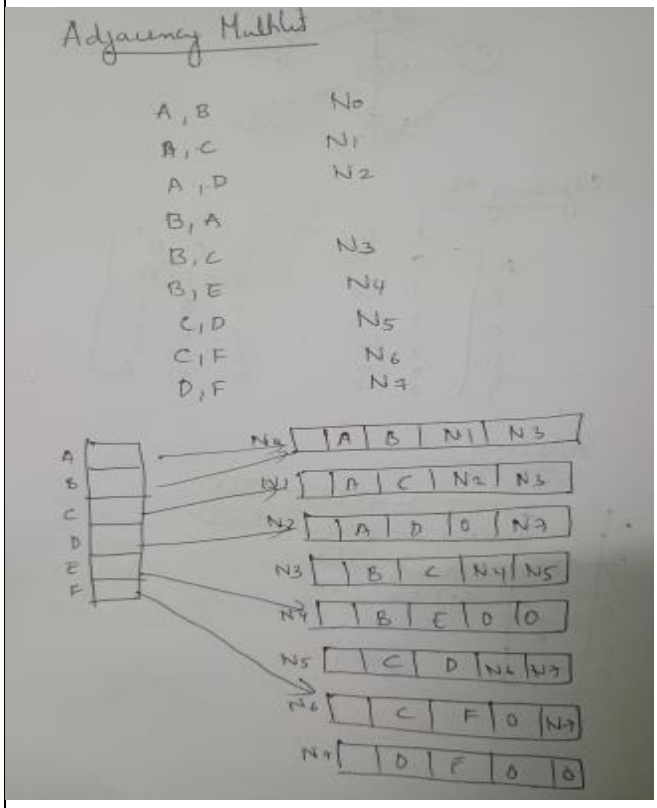
Search an item in the BST-3M



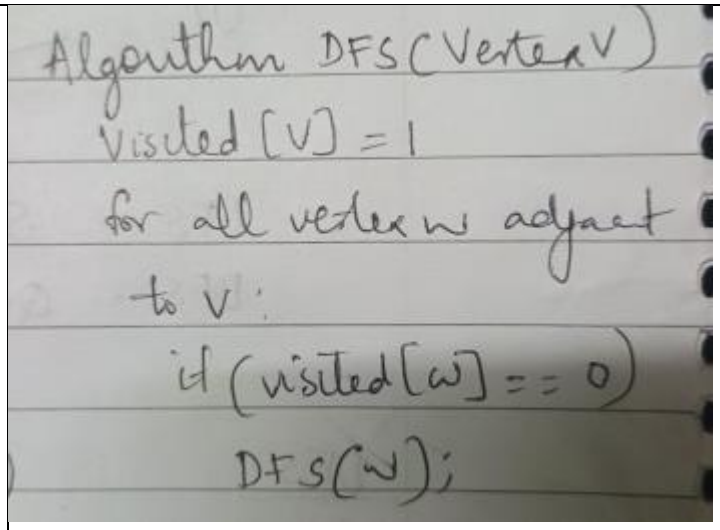
	b	Explain winner tree and looser tree with suitable examples. **Answer:** **Winner Tree Explanation with example-2M** **Looser Tree Explanation with example-2M**
2	a	Construct a binary tree by using the following in-order and pre-order traversal. In-order: BCAEDGHFI Pre-order: ABCDEFGHI Also perform the post order traversal of the tree. **Answer:** **Construction of Binary Tree-3M**  **Postorder-1M CBEHGIFDA**
	b	Demonstrate the tree, data, and array representation for the disjoint sets, S1= {1,2,5,7} S2= {8,9,3}. Also write algorithm for simple union () and simple find(). **Answer:** **of tree, data,Representation array -1M,2M,1M** 

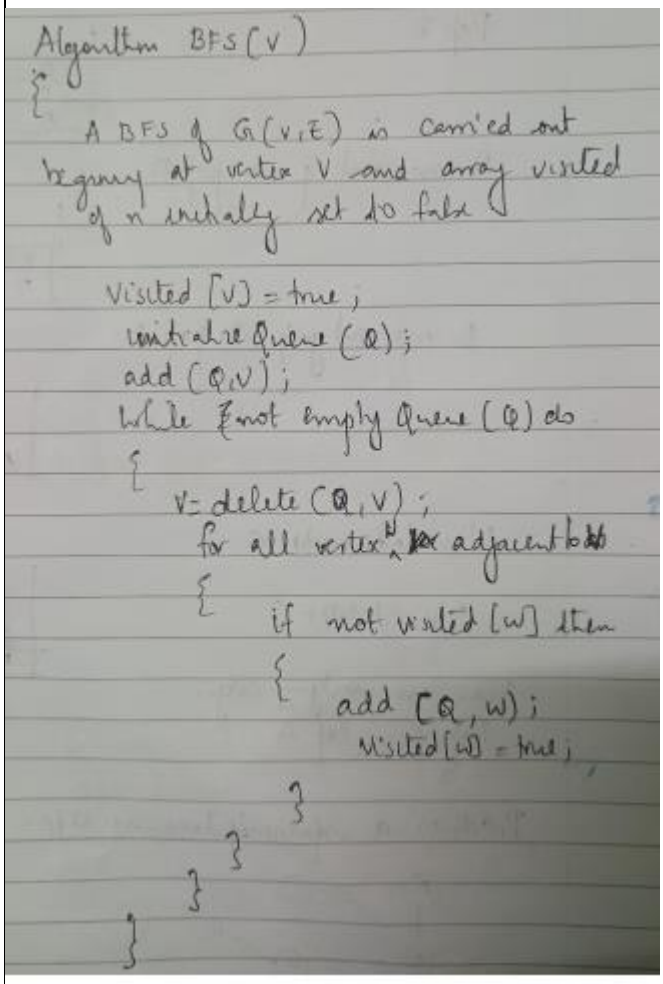
		simple union()- 1M  **simple find()- 1M** 
3	a	Define Graph. For the given graph,show all the three representations of the graph.  **Answer:** **Representation of graph** **Adjacency Matrix 1M** **Adjacency List 2M** **Adjacency Multilist 2M**





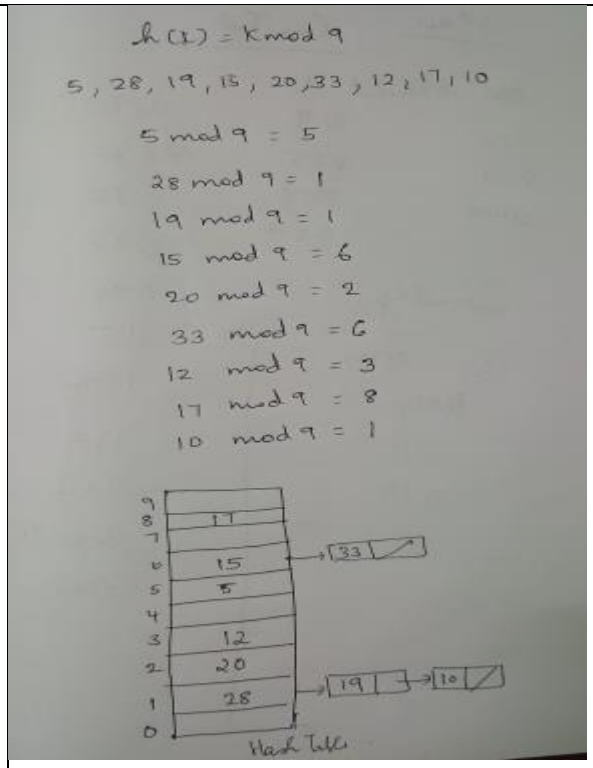
	b	What are the methods used for traversing a graph? Explain any one with example and write C function for the same. **Answer:** **Methods for Traversing –- 1M** **DFS (Depth First Search) BFS (Breadth First Search)** **Algorithm for DFS or BFS 2M**





Example 2M

4	a	Given a hash table with 9 slots. The hash function is h(k)=k mod 9. The collision is overcome by chaining. The following keys are inserted in the order. 5,28,19,15,20,33,12,17,10. Develop the corresponding hash table. **Answer:**

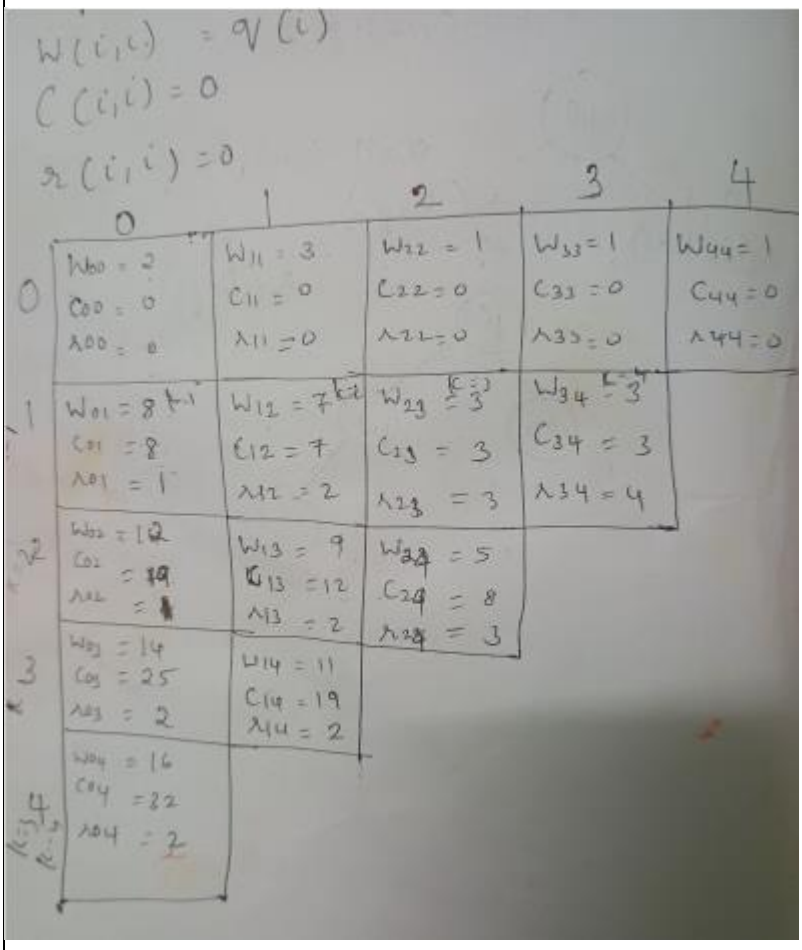
		
	b	Explain the following by taking suitable examples, a) Linear Probing b) Quadratic Probing c) Folding Method **Answer:** **Linear Probing technique with example-2M** **Quadratic Probing technique with example-2M** **Folding technique with example- 2M**
5	a	Explain dynamic hashing using directories with the help of an example. **Answer:** **Dynamic hashing using Directories 2M** -Importance of directory and buckets -Increasing depth of the directory. **Example 3M**
	b	Differentiate between height biased and weight biased leftist tree with examples. **Answer:** **Height biased leftist tree 2.5M** **Weight biased leftist tree 2.5M**
6	a	What is the need for an optimal BST. Find the optimal BST for n=4, Keys are 10,15,20, 25. p1, p2, p3, p4 =3,3,1,1

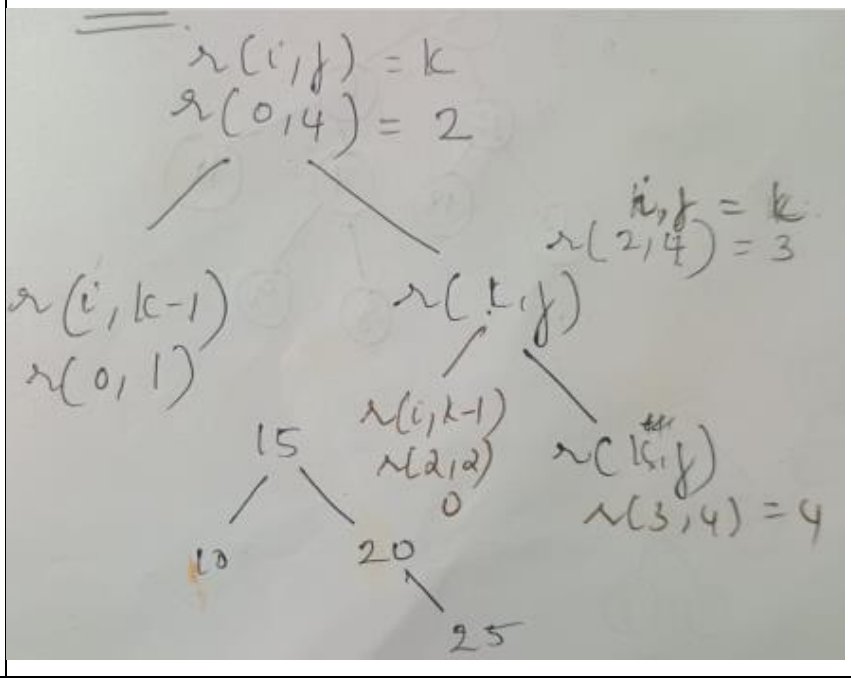
q0, q1, q2, q3, q4 =2,3,1,1,1

Answer:

Need for BST-2M

Problem-8M





CI **CCI** **HOD**

----------All the Best----------