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Computer Engineering Department

Question Bank for External Examination

1. Write an algorithm for finding average of given numbers. Calculate time complexity.
2. Given In-order and Preorder traversal, find Post-order traversal.
   In-order traversal = {4, 2, 5, 1, 3, 6}
   Preorder traversal = {1, 2, 4, 5, 3, 6}
3. Consider an example where the size of the queue is four elements. Initially the queue is empty. It is required to insert symbols 'A','B' and 'C'. Delete 'A' and 'B' and insert 'D' and 'E'. Show the trace of the contents of the queue.
4. Insertion sequence of names is Norma, Roger, John, Bill, Leo, Paul, Ken and Maurice
   (i) Show the behavior of creating a lexically ordered binary tree.
   (ii) Insert Kirk. Show the binary tree.
   (iii) Delete John. Show the binary tree.
5. Write an algorithm to return the value of i^{th} element from top of the stack.
6. Write an algorithm for inserting an element in a stack, removing an element from stack.
7. Write algorithm for inserting and deleting an element in circular queue.
8. Consider the expression v1*v2-(v3+v4^v5). Show the tree corresponding to the expression.
9. What is an ordered tree? What is forest?
10. Explain the structure of indexed sequential file.
11. Consider singly linked storage structures; Write an algorithm which inserts a node into a linked linear list in a stack like manner.
12. How open addressing can be used for collision resolution? Explain structure of sequential file. Explain processing in sequential file.
13. Consider singly linked storage structures; Write an algorithm which performs an insertion at the end of a linked linear list.
14. Give definitions (i) Graph (ii) Adjacent nodes
15. What is priority queue? Explain the array representation of priority queue.
16. Explain outdegree and indegree.
17. Explain Depth First Search operation.
18. Explain the trace of selection sort on following data.
    42, 23, 74, 11, 65, 58, 94, 36, 99, 87
19. Write and explain application of queue.
20. Explain Breadth First Search operation.
21. Explain the trace of bubble sort on following data.
    42, 23, 74, 11, 65, 58, 94, 36, 99, 87
22. What is prefix notation? Convert the following infix expression into prefix.
    A + B – C * D * E $ F $ G
23. Sort the following numbers using (i) Merge sort (ii) Quick sort:
    10 50 0 20 30 10
24. Explain AVL trees with example.

25. Write Kruskal's algorithm for minimum spanning tree with an example.
26. Discuss various rehashing techniques.
27. Write an algorithm to reverse a string using stack.
28. Explain double ended queue.
29. Explain Threaded binary trees with suitable examples.
30. Explain Depth First Search in graphs with an example.
31. Explain Binary search method.
32. Discuss various methods to resolve hash collision with suitable examples.
33. Mention the properties of a B-Tree.
34. Explain various applications of queue and stack.
35. Create a doubly circularly linked list and write a function to traverse it.
36. List advantages and disadvantages of Breadth First Search and Depth First Search.
37. Write Prim's algorithm for minimum spanning tree with an example.
38. Explain Sequential file organizations and list its advantages and disadvantages.
39. Explain insert and delete operations in AVL trees with suitable examples.
40. Evaluate the following postfix expression using a stack. Show the stack contents.

    AB*CD$-EF/G/+ A=5, B=2, C=3, D=2, E=8, F=2, G=2
41. With figure, explain the following terms:
    a. Depth of a tree
    b. Sibling nodes
    c. Strictly binary tree
    d. Ancestor nodes
    e. Graph
    f. Minimum spanning tree
    g. Degree of a vertex.
42. Explain Sequential, Indexed Sequential and Random file organizations.
43. Write an algorithm to reverse a string of characters using stack.

****** BEST OF LUCK ******