IMP QUESTIONS FOR DATA STRUCTURE AND ALGORITHM

1. Define stack as an ADT. Use this stack to swap two no.s (Write Sudo Code). → (MOST IMP)
2. Discuss how a two-way stack can be developed using array and write sudo code for Push, Pop and display operations.
3. Convert the following infix expressions to postfix using stack. Clearly indicate the contents of stack.
   i) (A+B) *C- D*F +C
   ii) (A-5)*(b+C-D*E)/F

4. Write sudo code for insert & delete operations of circular queue.
5. Discuss the types of priority queue with their applications.
6. Discuss the time complexity of removing an item from priority queue if sequential memory organization is used.

7. What is a Binary Tree? Explain the following operations on BinaryTree
   i) Inserting a node in to BT ii) Deletion a node from BT.
8. What is the use of threaded binary free? Give the node structure required for a threaded binary tree. Write pseudo code to find in-order successor of any node X in a threaded binary tree.
9. What are the advantages and disadvantages of TBT? Write a algorithm to implement Inorder Traversal of Inorder TBT.
10. Discuss the applications of Binary search tree & expression tree.

11. For the given graph show step-wise representation of MST using Kruskal's algorithm. (DO ANY PRACTISE ON GRAPH)

12. Construct an AVL search tree by inserting the following elements in the order of their occurence. Show the balance factor and type of rotation at each stage. → MOST IMP
13. What is topological Sorting? Illustrate with an example how topologicalS sorting is performed. List any two applications where topological sorting can be used.
14. Contrast between the approaches of finding MST using prim's algorithm & Kruskal's algorithm. Discuss the time complexities of both algorithms.
15. Illustrate with examples the Reheap up and Reheap down operations w.r.t. heaps. List any three applications of Heap.
16. Explain with example hash functions? . / Write short note on closed hashing and Open addressing.
17. Write Comparison of different file organizations (sequential, index sequential and Direct Access).
18. Explain prototype of the following function in C++ with examples. → IMP
    i) Seekg
    ii) Seekp
    iii)tellg
    iv) tellp
19. Discuss with examples at least three types of hashing functions, clearly mentioning the advantages & disadvantages of each. → IMP
20. Explain chaining with replacement and chaining without replacement in hashing?

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