FDT Question Bank for Test 2

Doubly Linked List

1)Write an algorithm to insert an element at the rear end of a DLL.(5)
2)Write an algorithm to delete an element from DLL.(5)
3)Write an algorithm to display the contents of a DLL.(5)
4).What do you mean by doubly linked list with help of a diagram (logical representation)?(2m)
5).What are the advantages of a doubly linked list over arrays?.(2)
6).What are the advantages of a doubly linked list over Singly linked lists?.(2)
7).What are the disadvantages of a doubly linked list over arrays?.(2)
8)Write a C function to insert an element at the rear end of a DLL.(5)
9)Write a C function to delete an element from DLL.(5)
10)Write a C function to display the contents of a DLL.(5)

Stacks

1. **Define a stack data structure.(2M)**
2. **What is the main principle of a stack?(2M)**
3. **How does a stack differ from a queue?(2M)**
4. **What is stack overflow?(2M)**
5. **Write a program in C to implement a stack using arrays and demonstrate push and pop operations.(5M)**
6. **Describe in detail how to implement a stack using a array , including algorithms for push , pop, and display operations.(10M)**
7. **Define a task.What is its principle of operation?(2M)**
8. **What is Stack Underflow?(2M)**
9. **Write the main operations performed on a stack?(2M)**
10. **What are the steps involved in Push operation?(2M)**
11. **What are the steps involved in Pop operation?(2M)**

12. **Explain the push and pop operations in a stack with algorithms.(5M)**
13. **Write a C program to implement stack operations(push, pop, and display) using an array.(10M)**

Queues

1. Explain the procedure to insert an element in a circular queue with an algorithm.
2. Write a program to implement a linear queue using arrays.
3. What is a double ended queue?
4. Explain priority queue with an example.
5. What is the disadvantage of a linear queue?
6. Write a C function to insert an element at the front end of the double ended queue.
7. Write a C function to insert an element at the rear end of the double ended queue.
8. Write a C function to delete an element at the rear end of the double ended queue.
9. Write a C function to delete an element at the front end of the double ended queue.
10. Write an algorithm to delete an element at the front end of the circular queue.
11. Write an algorithm to insert an element at the rear end of the circular queue.
7. Explain the process and algorithm for deleting an element from the linear queue.
8. Compare the circular queue and double ended queue.
9. Explain the working of the priority queue with an example.
10. What are front and rear pointers and explain their significance.

Trees

1. **Define Tree. Explain the tree traversals with algorithms and examples.**
2. **Define binary tree and give the binary tree node structure.**
3. **What are the different ways of representing a binary tree? Explain the Linked representation.**
4. **Explain the terms 'node', 'root', 'parent', 'child', 'leaf', and 'depth' in the context of trees.**
5. **Describe the preorder, inorder, and postorder traversal techniques for binary trees. Provide an example tree and demonstrate each traversal method.**
6. **Define traversal . what are the different types of traversals that can be performed on a tree?**
7. **Construct a BST from the following elements by repeatedly inserting them into the BST.**
   8 10 3 6 14 1 7 4 13
   Perform and display the three tree traversals on the above tree.(10 marks)
8. **Write a C function to insert an element into a BST. (5 marks)**
9. **Write a C function to delete an element from the BST. Describe with an example for each of the three cases that can arise while deleting an element from BST. (10 marks)**
10. **Write C functions to perform any two tree traversals on a Binary Search Tree. (5 marks)**
11. **Define Complete Binary Tree with a example (2 marks)**
12. **Define Almost Complete Binary Tree with a example (2 marks)**
13. **Define Balanced Binary Tree with a example (2 marks)**
14. **Define Strictly Binary Tree with a example (2 marks)**
15. **Define the following terms (2 marks)**
    a) Descendant b)Ancestor