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Course: CSE3004_Design and Analysis of Algorithms _AP2025262001439

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Test Duration: 00:12:24 | Test Start Time: Sep 16, 2025 | 06:07 PM | Test Submit Time: Sep 16, 2025 | 06:20 PM

Summary | Sections | Filters

1 MCQ (15)

Question No: 1

Multi Choice Type Question

What happens if the frequency of some keys in an OBST is significantly higher than others?

- [x] The tree will become unbalanced
- [ ] The tree will become a complete binary tree
- [ ] The tree will always remain balanced
- [ ] The search cost will increase

Status Correct | Mark obtained 1/1 | Hints used 0 | Level Easy | Question type MCQ Single Correct | Subject Data Structure | Topic Tree | Sub Topic Binary Search Tree
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Question No: 2

Multi Choice Type Question

What is the primary benefit of an OBST in practical applications?

- [ ] It can handle infinite keys efficiently
- [ ] It eliminates the need for rebalancing
- [ ] It always results in a perfectly balanced tree
- [x] It reduces the average search time compared to a regular BST

Status Correct | Mark obtained 1/1 | Hints used 0 | Level Easy | Question type MCQ Single Correct | Subject Data Structure | Topic Tree | Sub Topic Binary Search Tree
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Question No: 3

Multi Choice Type Question

What is a weight-balanced tree?

- [x] A binary tree that stores the sizes of subtrees in nodes
- [ ] A binary tree with an additional attribute of weight
- [ ] A height balanced binary tree
- [ ] A normal binary tree

Status Correct | Mark obtained 1/1 | Hints used 0 | Level Easy | Question type MCQ Single Correct | Subject Data Structure | Topic Tree | Sub Topic Binary Search Tree
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Question No: 4

Multi Choice Type Question

What do the below definitions convey?

I. A binary tree is balanced if, for every node, it is going to hold that the number of inner nodes in the left subtree and the number of inner nodes in the right subtree differ by at most 1.
II. A binary tree is balanced if, for any two leaves, the difference in depth is at most 1.

- [ ] Height-balanced and weight-balanced tree definitions
- [ ] Definitions of weight-balanced trees
- [ ] Definitions of height-balanced tree
- [x] Weight-balanced and height-balanced tree definitions

Status Correct | Mark obtained 1/1 | Hints used 0 | Level Medium | Question type MCQ Single Correct | Subject Data Structure | Topic Tree | Sub Topic Binary Search Tree
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Question No: 5

Multi Choice Type Question

When constructing an OBST using dynamic programming, what does the recurrence relation primarily depend on?

- [ ] The in-order traversal of the tree
- [ ] The number of keys present in the tree
- [ ] The depth-first search traversal of the tree
- [x] The left and right subtrees cumulative search cost

Status Correct | Mark obtained 1/1 | Hints used 0 | Level Easy | Question type MCQ Single Correct | Subject Data Structure | Topic Tree | Sub Topic Binary Search Tree
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Question No: 6

Multi Choice Type Question

The cost function of an OBST is computed based on which factor?

- [x] The depth of nodes weighted by their probabilities
- [ ] The in-order traversal of the tree
- [ ] The number of child nodes
- [ ] The number of edges in the tree

Status Correct | Mark obtained 1/1 | Hints used 0 | Level Easy | Question type MCQ Single Correct | Subject Data Structure | Topic Tree | Sub Topic Binary Search Tree
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Question No: 7

Multi Choice Type Question

What is the primary objective of constructing an Optimal Binary Search Tree (OBST)?

- [ ] To ensure all elements are equally distributed
- [ ] To maximize the height of the tree
- [ ] To minimize the number of nodes in the tree
- [x] To minimize the expected search cost based on access probabilities

Status Correct | Mark obtained 1/1 | Hints used 0 | Level Easy | Question type MCQ Single Correct | Subject Data Structure | Topic Tree | Sub Topic Binary Search Tree
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Question No: 8

Multi Choice Type Question

What are the operations that can be performed on weight balanced tree?

- [x] All basic operations and set intersection, set union and subset tests
- [ ] Only insertion and deletion
- [ ] Set intersection, set union and subset test
- [ ] All basic operations

Status Correct | Mark obtained 1/1 | Hints used 0 | Level Medium | Question type MCQ Single Correct | Subject Data Structure | Topic Tree | Sub Topic Binary Search Tree
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Question No: 9

Multi Choice Type Question

In an OBST, what additional information is required apart from the keys and their values?

- [ ] Parent-child relationships
- [x] Frequency of access (probabilities)
- [ ] Pre-order traversal sequence
- [ ] Hash values of keys

Status Correct | Mark obtained 1/1 | Hints used 0 | Level Easy | Question type MCQ Single Correct | Subject Data Structure | Topic Tree | Sub Topic Binary Search Tree
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Question No: 10

Multi Choice Type Question

Which algorithm is commonly used to construct an Optimal Binary Search Tree?

- [ ] Divide and Conquer
- [ ] Greedy Algorithm
- [x] Dynamic Programming
- [ ] Backtracking

Status Correct | Mark obtained 1/1 | Hints used 0 | Level Easy | Question type MCQ Single Correct | Subject Data Structure | Topic Tree | Sub Topic Binary Search Tree
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