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Elementary Data Structures and BST

Due: 9/15/2024 10:00 PM • Algorithms Analysis and Design



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Attempt

Attempt 1

Due on Sep 15, 2024 10:00 PM

Available on Sep 12, 2024 10:00 PM until Sep 17, 2024 10:00 PM

Written: Sep 14, 2024 11:57 PM - Sep 15, 2024 12:36 AM Quizzes

Event Log

Timing

Time Spent: 0:39:41

Time Limit: 1:20:00. Not exceeded

Evaluation Summary

Reset Evaluation

Attempt Grade

31 / 31

Student View Preview

31 / 31 - 100 %

Attempt Feedback

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Quiz Results

Question 1

Assume that you have an empty stack. Write the values that are in the stack after the following operations:

```
INSERT( A )
INSERT( L )
DELETE()
INSERT( G )
INSERT( O )
```

Update

Retract

```
INSERT( T )

DELETE()

INSERT( H )

DELETE()

DELETE()

INSERT( M )

INSERT( S )

DELETE()
```

(For example, if the stack contents were A, B, C, D, E, F (where A was the first item in the stack), then write A B C D E F).

Answer: A G M 🗸

Save Time

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Expand question 1 feedback

Question 2

Assume that you have an empty queue. Write the values that are in the queue after the following operations:

INSERT(A) INSERT(L) DELETE() INSERT(G) INSERT(0) INSERT(R) DELETE() INSERT(I) INSERT(T) DELETE() DELETE() INSERT(H) DELETE() DELETE() INSERT(M) INSERT(S) DELETE()

(For example, if the queue contents were A, B, C, D, E, F (where A was the first item in the queue), then write A B C D E F).

Answer: HMS 🗸

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> Expand question 2 feedback

Question 3

What is the worst case time complexity to search for an element in a binary search tree (BST) with ${m n}$ nodes?

- O(n)
 O(logn)
 O(1)
 O(nlogn)
 Save Time
 12:36 AM

Score

2 / 2 (auto-graded)

> Expand question 3 feedback

Question 4

What is the time complexity for enqueuing and dequeuing elements from a queue implemented using a linked list?

O(n)

√ O(1)

O(nlogn)

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Score

2 / 2 (auto-graded)

Expand question 4 feedback

Question 5

For stack implementation using array, the incremental strategy is better than double strategy to extend the array.

True

✓ False

Save Time

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Score

2 / 2 (auto-graded)

Expand question 5 feedback

Question 6

In a stack implemented using a linked list, what is the time complexity for reversing the entire stack in place, assuming you can only use stack operations (push, pop) and a single additional stack?

✓() O(n)

O(n^2)

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Score

4 / 4 (auto-graded)

Expand question 6 feedback

Question 7

You are given a binary search tree with unique integer keys. If you delete the root node, what will be the time complexity of finding its in-order successor?

O(n)

O(logn)

✓ O(logn) in a balanced BST, O(n) in a skewed tree

O(1)

Save Time

12:36 AM

Score

3 / 3 (auto-graded)

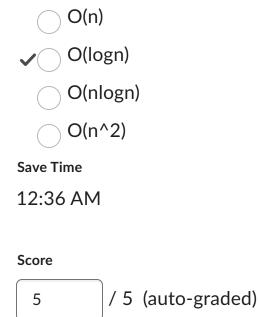
Expand question 7 feedback

Question 8

The array based tree implementation is better when

24, 3:22 PM	Grade Attempt - Algorithms Analysis and Design Section V01 Fall Semester 2024 CO - Columbus State University	
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✓ the	e tree is a Complete Binary Tree.	
✓ the	e tree requires many insertions and deletion o	perations.
Save Time		
12:36 Al	M	
Score		
3	/ 3 (auto-graded)	
Expand question 8 feedback		
Question	9	
You are a	given two sorted integer arrays A and B such t	hat no integer is contained
twice in	the same array. A and B are nearly identical. H	lowever, B is missing
exactly o	one number. What will be the order of time co	mplexity for the best

algorithm to find the missing number in B. Assume that \boldsymbol{n} is the number of elements in A.



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