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Test Name:	**MBA: Algorithms**
Taken On:	1 Aug 2019 15:54:24 PDT
Time Taken:	12 min 20 sec/ 15 min
Work Experience:	1 years
Invited by:	Jeff
Invited on:	1 Aug 2019 15:51:20 PDT

100%

89/89

scored in **MBA: Algorithms** in 12 min 20 sec on 1 Aug 2019 15:54:24 PDT

Tags Score:

- BFS 20/20
- Basic Algorithms 40/40
- Binary Search Trees 10/10
- DFS 25/25
- Data Structures 10/10
- Essential 89/89
- Intermediate Programming 5/5
- Javascript 10/10
- Recursion 5/5
- Space Complexity 10/10
- Time Complex 5/5
- Time Complexity 39/39
- Trees 5/5

Recruiter/Team Comments:

No Comments.

	Question Description	Time Taken	Score	Status
Q1	Depth First Search > **Multiple Choice**	1 min 16 sec	5/ 5	✓
Q2	Searches > **Sentence Completion**	1 min 28 sec	5/ 5	✓
Q3	Time Complexity: Binary Search Tree > **Sentence Completion**		10/ 10	✓
Q4	Depth First Search Traversal > **Multiple Choice**	45 sec	5/ 5	✓
Q5	Time Complexity > **Multiple Choice**	27 sec	5/ 5	✓
Q6	Graph Traversal > **Multiple Choice**	7 sec	5/ 5	✓
Q7	Searches > **Sentence Completion**	27 sec	10/ 10	✓

Q8	Time Complexity: Array › Multiple Choice	11 sec	5/ 5	✓
Q9	Searches › Multiple Choice	7 sec	5/ 5	✓
Q10	Big-O › Sentence Completion	1 min 7 sec	14/ 14	✓
Q11	Sorting › Multiple Choice	5 sec	5/ 5	✓
Q12	Recursion › Multiple Choice	27 sec	5/ 5	✓
Q13	Breadth First Search Traversal › Multiple Choice	23 sec	5/ 5	✓
Q14	Time Complexity: B-Tree › Multiple Choice	5 min 31 sec	5/ 5	✓

QUESTION 1

Correct Answer

Score 5

Depth First Search › Multiple Choice

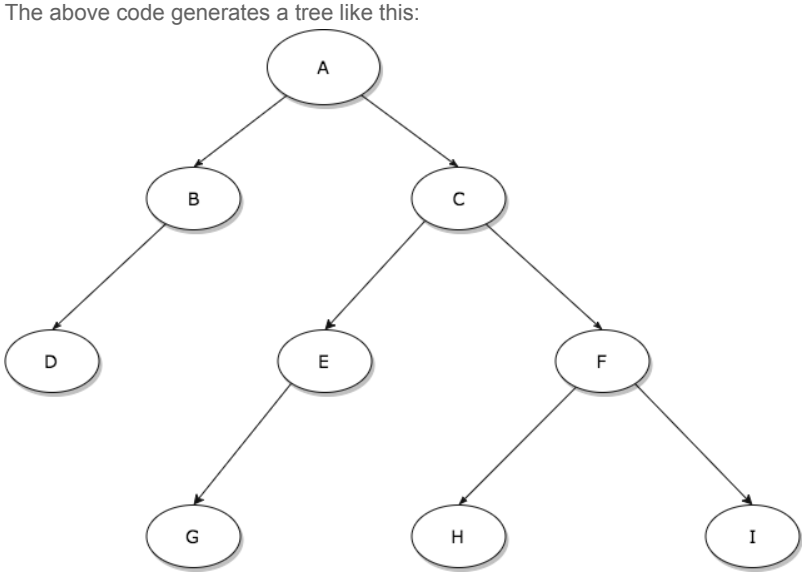
Basic Algorithms | Javascript | DFS | Essential

QUESTION DESCRIPTION

```
class Node
  attr_reader :value, :children
  def initialize(value, children = [])
    @value = value
    @children = children
  end
end

d = Node.new("D")
g = Node.new("G")
h = Node.new("H")
i = Node.new("I")
b = Node.new("B", [d])
e = Node.new("E", [g])
f = Node.new("F", [h, i])
c = Node.new("C", [e, f])
a = Node.new("A", [b, c])
```

The above code generates a tree like this:



Select the answer that best completes this **depth-first search**.

```
def dfs(node, target)
  return node if node.value == target
```

```
  node.children.each do |child|
    # ********
    # Missing code goes here
    # ********
    return result if result
  end
  nil
end
```

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- node.value = target
- result = node.value
- target = node.value
- ✓ result = dfs(child, target)

No Comments

QUESTION 2

Correct Answer

Score 5

Searches › Sentence Completion

DFS BFS Essential

QUESTION DESCRIPTION

Problem Statement

Use the following words to fill in the blank:

- depth-first
- breadth-first

Complete String

A {blank} search guarantees the shortest path from the root node to the target node.

CANDIDATE ANSWER

A **breadth-first** ✓ search guarantees the shortest path from the root node to the target node.

No Comments

QUESTION 3

Correct Answer

Score 10

Time Complexity: Binary Search Tree › Sentence Completion

Binary Search Trees

Time Complexity | Essential

QUESTION DESCRIPTION

Problem Statement

Fill in the blanks in regards to a **Binary Search Tree**.

You can use the following letters to answer the question:
A. O(1)
B. O(n)
C. O(log(n))
D. O(n*log(n))
E. $O(n^2)$

Complete String

The AVERAGE time complexity for searching is {blank}. The WORST CASE time complexity for searching is {blank}.

INTERNAL NOTES

10

CANDIDATE ANSWER

```
The AVERAGE time complexity for searching is c .
The WORST CASE time complexity for searching is b .
```

No Comments

QUESTION 4

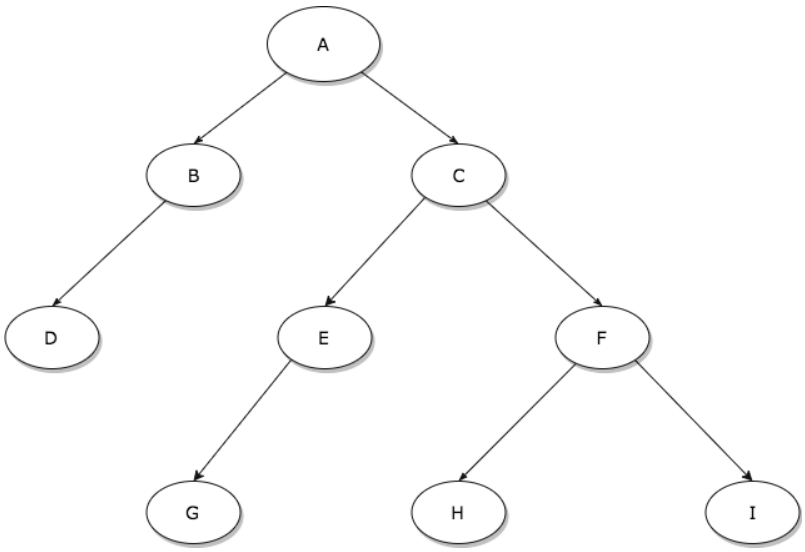
Correct Answer

Score 5

Depth First Search Traversal › Multiple Choice DFS Essential

QUESTION DESCRIPTION

Given the following tree:



In what order will a **depth-first search** traverse this tree?

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- A, B, C, D, E, F, G, H, I
- ✓ A, B, D, C, E, G, F, H, I
- D, G, H, I, E, F, B, C, A
- D, B, A, G, E, C, H, F, I

No Comments

QUESTION 5

Correct Answer

Score 5

Time Complexity › Multiple Choice

Basic Algorithms | Time Complexity | Data Structures | Essential

QUESTION DESCRIPTION

Choose the answer which best completes the following statement:

In regards to **worst case time complexity**, a **queue** will have a fast insertion time (O(1)), but a(n) _____ will have a fast access time (O(1)).

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- stack
- linked list
- ✓ array
- B-Tree

No Comments

QUESTION 6

Correct Answer

Score 5

Graph Traversal › Multiple Choice

Basic Algorithms | Essential

QUESTION DESCRIPTION

When looking at a **weighted graph,** which algorithm would allow you the find the shortest path from one node to another node?

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- Topological Sort
- Breadth First Search
- ✓ Dijkstra's algorithm
- Depth First Search

No Comments

QUESTION 7

Correct Answer

Score 10

Searches › Sentence Completion

BFS | DFS | Space Complexity | Essential

QUESTION DESCRIPTION

Problem Statement

Use the following words to fill in the blanks:

- depth-first
- breadth-first

Complete String

When searching for an item that does is NOT present in a tree, a {blank} search will typically take up more space (memory) than a {blank} search.

INTERNAL NOTES

10

CANDIDATE ANSWER

When searching for an item that does is NOT present in a tree, a **breadth-first** ✓ search will typically take up more space (memory) than a **depth-first** ✓ search.

No Comments

QUESTION 8

Correct Answer

Score 5

Time Complexity: Array › Multiple Choice

Intermediate Programming | Time Complexity | Data Structures | Essential

QUESTION DESCRIPTION

The time complexity for searching an **array** is _____ .

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- O(1)
- ✓ O(n)
- $O(n^2)$
- O(log(n))

No Comments

QUESTION 9

Correct Answer

Score 5

Searches › Multiple Choice

Time Complex | Basic Algorithms | Essential

QUESTION DESCRIPTION

Given a sorted array of unique integers, which searching algorithm would be fastest at finding a target value?

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- Bubble Search
- Linear Search
- ✓ Binary Search
- Merge Search

No Comments

QUESTION 10

Correct Answer

Score 14

Big-O › Sentence Completion

Time Complexity | Essential

QUESTION DESCRIPTION

Problem Statement

Rank the following time-complexities from **best to worst**:

A) $O(n^2)$
B) $O(n)$
C) $O(2^n)$
D) $O(n*log(n))$
E) $O(n!)$
F) $O(1)$
G) $O(log(n))$

Complete String

{blank} {blank} {blank} {blank} {blank} {blank} {blank}

INTERNAL NOTES

14

CANDIDATE ANSWER

f ✓
g ✓
b ✓
d ✓
a ✓
c ✓
e ✓

No Comments

QUESTION 11

Correct Answer

Score 5

Sorting › Multiple Choice

Basic Algorithms | Essential

QUESTION DESCRIPTION

Given an unsorted array of integers, which of the following sorts would, **in the worst case scenario**, have a quadratic time complexity ($O(n^2)$) and a constant space complexity ($O(1)$)?

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- Mergesort
- Heapsort
- ✓ Bubble Sort
- Quicksort

No Comments

QUESTION 12

Correct Answer

Score 5

Recursion › Multiple Choice

Basic Algorithms | Recursion | Javascript | Essential

QUESTION DESCRIPTION

What is the **return value** of the following code?

```
function recurse(num) {
  if (num <= 0) return [num];
  const result = [num];
  return result.concat(recurse(num - 1));
}

recurse(10);
```

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- Infinite loop/ stack overflow
- [0]
- [10]
- [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
- ✓ [10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0]

No Comments

QUESTION 13

Correct Answer

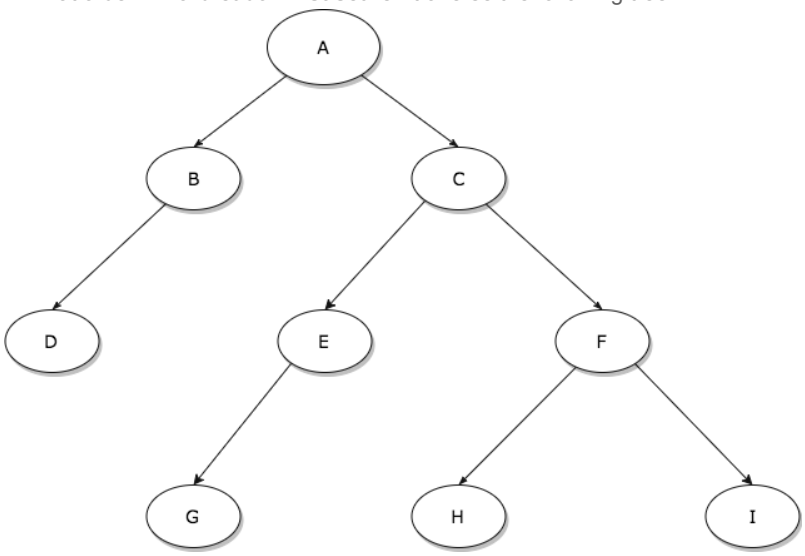
Score 5

Breadth First Search Traversal › Multiple Choice

Basic Algorithms | BFS | Essential

QUESTION DESCRIPTION

In what order will a **breadth-first search** traverse the following tree:



CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- A, B, D, C, E, G, F, H, I
- D, B, A, G, E, C, H, F, I
- ✓ A, B, C, D, E, F, G, H, I
- D, G, H, I, E, F, B, C, A

No Comments

QUESTION 14

Correct Answer

Score 5

Time Complexity: B-Tree › Multiple Choice

Basic Algorithms | Trees | Time Complexity | Essential

QUESTION DESCRIPTION

In the **worst case**, the time complexity for searching for a node a **B-tree** is _____.

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- O(1)
- $O(n^2)$
- ✓ O(log(n))
- O(n*log(n))

No Comments