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NPTEL

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Courses » Programming, Data structures and Algorithms using C

Announcements Course Ask a Question Progress

Unit 7 - Week 6: Stacks, Queues, Heaps, Trees and Graphs



Course outline

Assignment0

Week 1: Basic Programming Constructs

Week 2: Arrays, Pointers and Strings

Week 3: Functions, Time complexity

Week 4: Sorting and Searching Algorithms

Week 5: Structures, Dynamic Memory Allocation and ADTs

Week 6: Stacks, Queues, Heaps, Trees and Graphs

- Stacks : Last In First Out
- Queues: First In First Out
- Trees
- Tree Traversal
- Binary Search Tree
- Heaps
- Graphs and Representations
- Quiz : Week 6 Quiz
- Programming Assignment 6.1:

Week 6 Quiz

The due date for submitting this assignment has passed. **Due on 2018-03-21, 23:59 IST.** As per our records you have not submitted this assignment.

1) A dense graph is a graph in which number of edges is very huge. Which of the following representation will be better to represent a dense graph? 1 point

- Adjacency matrix representation
- Adjacency list representation

No, the answer is incorrect.

Score: 0

Accepted Answers:

Adjacency matrix representation

2) An undirected acyclic graph with 'n' nodes has (n-1) edges. What can you say about it? 1 point

- It is dense
- It is disconnected
- It is a tree
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

It is a tree

3) Which of the following is true for an undirected graph? 1 point

- Links are bidirectional
- Adjacency matrix is symmetric
- Both (a) and (b)
- Neither (a) nor (b)

No, the answer is incorrect.

Score: 0

Accepted Answers:

Both (a) and (b)

4) Which of the following data structures is most suitable to process the jobs that are submitted to a printer? 1 point

Removing Brackets

Programming Assignment 6.2 : Heap Sort using Min-Heap

Week 6 Feedback

Quiz 6 Solutions

Week 7: Greedy Algorithms and Dynamic Programming

Week 8 : Hash Tables & Graph Algorithms

Week 9 : Graph Traversal, Articulation Points, File I/O, Modular programming

Help and FAQ

Interactive session with students

- Stack
- Queue
- Tree
- Graph

No, the answer is incorrect.

Score: 0

Accepted Answers:

Queue

5) Which of the following arrays is a max heap?

- 10,20,35,43,82,79
- 15,3,4,7,18,2
- 25,16,7,10,3,1,5
- 23,8,42,16,7

No, the answer is incorrect.

Score: 0

Accepted Answers:

25,16,7,10,3,1,5

6) Which of the following property(ies) holds true for a Binary Search Tree?

- Repetition of keys is not allowed
- Inorder traversal prints the keys in sorted order
- All elements belonging to the left subtree of any node 'v' of the BST has a value lesser than the value at node 'v' and All elements belonging to the right subtree of any node 'v' of the BST has a value greater than the value at node 'v'
- All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

7) A simple graph is one which has no loops(edges which start and end at the same vertex) and no multi edges (i.e. if more than one edge is present between the same pair of adjacent nodes and no other nodes are present along those edges, then the graph is said to possess multi edges). How many edges can a simple undirected graph with 'n' nodes have at the maximum?

- n
- n-2
- $n(n+1)/2$
- $n(n-1)/2$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$n(n-1)/2$

8) A BST visits its keys in the order 23,7,5,19,8,95,67 during its preorder traversal. What can you say about the order in which keys shall be visited during post order traversal?

- Cannot be uniquely determined
- 7,19,95,23,8,5,67
- 5,8,7,19,95,67,23
- 5,8,19,7,67,95,23

No, the answer is incorrect.

Score: 0

Accepted Answers:

5,8,19,7,67,95,23



1 point

1 point

1.9) Consider the following function definition:

1 point

When $f(\text{root})$ is called where root represents a pointer to the root node of a binary tree, what does the function f return?

- Number of nodes in that binary tree
- Number of full nodes (nodes with both left and right children) in that binary tree
- Number of leaf nodes(nodes with no children) in that binary tree
- Height of that binary tree

No, the answer is incorrect.

Score: 0

Accepted Answers:

Number of leaf nodes(nodes with no children) in that binary tree



1.10)Following function aims to find the total number of nodes in a binary tree:

1 point

ur

What is the appropriate statement in place of '#?'

- $\max(\text{nn}(\text{t->left}), \text{nn}(\text{t->right}))$
- $1 + \max(\text{nn}(\text{t->left}), \text{nn}(\text{t->right}))$
- $\text{nn}(\text{t->left}) + \text{nn}(\text{t->right})$
- $1 + \text{nn}(\text{t->left}) + \text{nn}(\text{t->right})$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$1 + \text{nn}(\text{t->left}) + \text{nn}(\text{t->right})$

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