Trees and Graphs Interview Questions

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Given a root to a binary tree, find the level of the tree with the minimum sum.

▲ 0 ▼
of 0 votes

for example:

```
50
/ \
6 2
/ \ /
30 80 7
```

the answer is: level 2

(/question?id=5633825693499392) - Ladym (/user?id=6204128637222912) October 10, 2017 (2017-10-10T10:43:02.207200Z) in Israel | Report Duplicate (/reportduplicate?id=5633825693499392) | Flag (/flagquestion?id=5633825693499392)

3
Answers (/question?id=563382569

A binary tree is started burning from a leaf node. What is the time(1ms to burn from node to node) it takes to entire tree get burned? The fire will spread to all the paths from a node.

▲ 1 ▼
of 1 vote

(/question?id=5756760659853312) - SIVA R (/user?id=5714514479677440) August 20, 2017 (2017-08-20T07:47:40.849880Z) in United States | Report Duplicate (/reportduplicate?id=5756760659853312) | Flag (/flagquestion?id=5756760659853312)

4
Answers (/question?id=575676065

Given a binary tree, write a recursive method boolean method(int x, int y) which will return true
1. if node y (meaning a node with a value of int y) is a node that is contained in one of the two possible subtrees of x,
2. true if x==y, and a node with a value x==y exists, otherwise
3. return false,
basicallly whether x contains y? I had a question like this on my exam, I solved this problem using four arguments in my function. I wonder whether it is even possible to solve it with only 2 int arguments and recursively.

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5
Answers (/question?id=568587306

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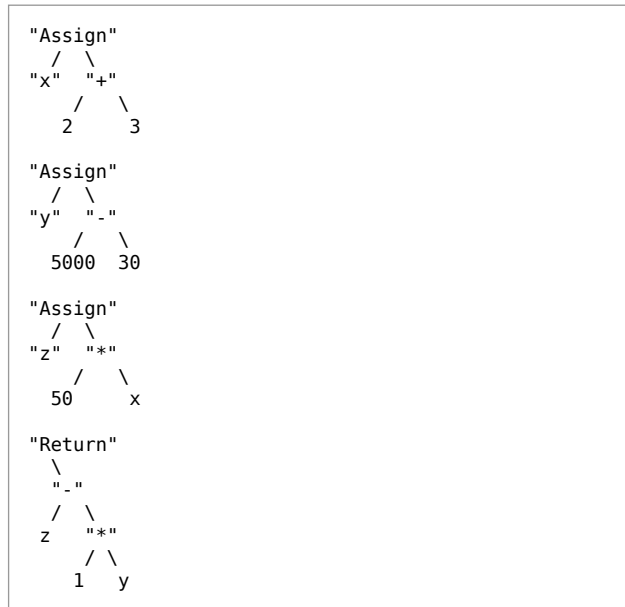
Google (1369) (/page?pid=google-interview-questions)

Bloomberg LP (676) (/page?pid=bloomberg-lp-interview-questions)

Given a list/array of "Assign" trees with integers, operators and variables, return the result of the requested "Result" tree expression.

Example:

```
   "Assign"
   /    \
 "x"    "+"
        /   \
       2     3

   "Assign"
   /    \
 "y"    "-"
        /   \
      5000   30

   "Assign"
   /    \
 "z"    "*"
        /   \
       50     x

   "Return"
       \
       "-"
      /    \
     z     "*"
           / \
          1    y
```

6 Answers (/question?id=564471449...)

I've got these trees of integers; they're like regular trees, but they can share nodes.
I need to know if any branch of this tree sums to 100.
```
7
/ \
8 6
/ \ / \
2 3 9
/ \ / \ / \
5 4 1 100
```

Follow up question was how would you change the code to handle negative numbers.

0 Answers (/question?id=576926971...)

Find distance between any two nodes of binary tree and binary search tree.

6 Answers (/question?id=565612699...)

Given a binary tree of integers, write code to store the tree into a list of integers and recreate the original tree from a list of integers.

Here's what your method signatures should look like (in Java):

List<Integer> store(Node root)
Node restore(List<Integer> list)

Example Tree:

```
5
/ \
3 2
/ / \
1 6 1
```

3 Answers (/question?id=563278333...)

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You are given a NxN boolean matrix, where matrix(i,j) will be one if 'i' is a parent of 'j' in a tree, otherwise, it is zero.
Construct this tree.

0
of 0 votes

6
Answers (/question?id=518108860...)

You are given an array of nodes where each node consists of node name, isValid flag, and parent Node index. so, this array actually represents a tree(forest). where root node has -1 as its index for the parent node. rest all node have their parent's index value.

You will be given this array and an index. You have to cut down the subtree from the index. Cutting down a tree means, making all the nodes of that subtree false(Isvalid flag).
He was expecting O(N) solution.

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of 0 votes

3
Answers (/question?id=593114397...)

Q 4. You are given a binary tree, and you have to return list of lists of node. where same level nodes should be in the same list, nodes are in oposite order in next list from the previous list
Ex:

```
       4
     /   \
    3     5
   / \     \
  1  10   -4
```
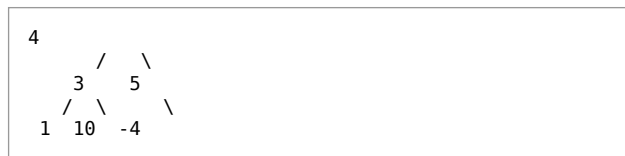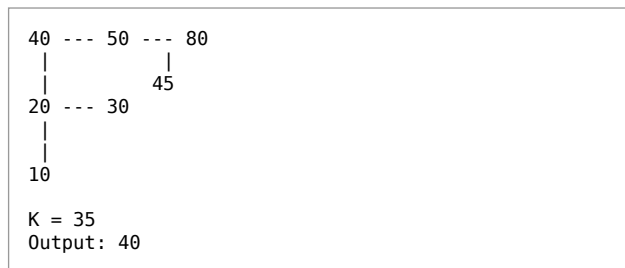
Output would be
[[4], [5, 3], [1, 10, -4]]

Desigred Complexity : O(N) + O(N).

0
of 0 votes

9
Answers (/question?id=573223378...)

You are given a BST of integers and an integer K. You have to find the smallest greater integer then K in the BST.
Ex

```
40 --- 50 --- 80
 |            |
 |           45
20 --- 30
 |
 |
10

K = 35
Output: 40
```

0
of 0 votes

4
Answers (/question?id=516897835...)

Given the following set of strings, write a function that stores this information.

// /Electronics/Computers/Graphics Cards
// /Electronics/Computers/Graphics Cards
// /Electronics/Computers/SSDs
// /Electronics/Computers/Graphics Cards
// /Electronics/Computers/SSDs
// /Electronics/TVs
// /Electronics/Computers/Graphics Cards
// /Electronics/TVs
// /Electronics/TVs
// /Garden

2
of 2 votes

3
Answers (/question?id=564900430...)

What's Going On

ChrisK said I interpret the question as follows: - suppose number n is ...

Double_A said void main() { int i,j,k,n1,n2,c,x ...

manikadanmanio up-voted sudip.innovates's comment: O(n) approach ...

manikadanmanio up-voted sandak's comment: {{{ public class Solution { public ...

sandak said O(N^2) time, no additional space. less than O ...

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// /Automotive/Parts

Your datastructure should be able to provide information as such:
// / = 11
// /Electronics = 9
// /Electronics/Computers = 6
// /Electronics/Computers/Graphics Cards = 4
// /Electronics/TVs = 3
// etc
// ["/Electronics/Computers/Graphics Cards", "/Garden"]

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Q1. You are given a binary search tree (with unique values) and two values. You need to find their lowest common ancestor. (Expected Complexity O(log(n)) + O(1))
Q2. Now let's assume the tree has duplicates, and when a duplicate number come, the insertion logic chooses left node. (Expected Complexity O(log(n)) + O(1))
Q3.Now let's assume the input tree is a binary tree instead of the binary search tree.(Expected Complexity O(n) + O(1))

(/question?id=5198851397910528) - sonesh (/user?id=14962663) April 13, 2017 (2017-04-13T19:43:55.631030Z) in United States | Report Duplicate (/reportduplicate?id=5198851397910528) | Flag (/flagquestion?id=5198851397910528)

5
Answers
(/question?id=519885139...

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/**
* A tournament tree is a binary tree
* where the parent is the minimum of the two children.
* Given a tournament tree find the second minimum value in the tree.
* A node in the tree will always have 2 or 0 children.
* Also all leaves will have distinct and unique values.
* 2
* / \
* 2 3
* / \ | \
* 4 2 5 3
*
* In this given tree the answer is 3.
*/

```
class Node {
    Integer value;
    Node left, right;
    Node(Integer value, Node left, Node right) {
        this.value = value;
        this.left = left;
        this.right = right;
    }
}
class Solution {
    /**
     * This should return the second minimum
     * int value in the given tournament tree
     */
    public static Integer secondMin(Node root) {

    }
}
```

(/question?id=5196022759292928) - lkpunisher (/user?id=5758152687484928) April 05, 2017 (2017-04-05T03:23:02.380870Z) in United States | Report Duplicate (/reportduplicate?id=5196022759292928) | Flag (/flagquestion?id=5196022759292928)

18
Answers
(/question?id=519602275...

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find the given Binary tree is mirrored tree or not
should be like

60
/ \
30 30
/ \ / \
20 50 50 20

(/question?id=5169267562512384) - Jagadeesh (/user?id=5686138690863104) March 12, 2017 (2017-03-12T03:53:11.812390Z) in India for Kindle | Report Duplicate (/reportduplicate?id=5169267562512384) | Flag (/flagquestion?id=5169267562512384)

9
Answers
(/question?id=516926756...

Given a BST (Binary Search Tree) , Each node value should replace with sum of the node which are greater-than the given node.

conditions :
No Extra space / variable can use
Modify the existing tree in optimal way.

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10
Answers (/question?id=575856901)

Given a Binary tree and value X. Find X in the tree and return its parent

X:

10
4 3
5 7 9 8

If X = 7, return 4

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13
Answers (/question?id=572649042)

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na

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Answers (/question?id=571131432)

Convert an unordered tree to a binary tree

(/question?id=5699311095513088) - mh4wt@virginia.edu (/user?id=5767014007177216) December 18, 2016 (2016-12-18T06:11:02.157540Z) in United States | Report Duplicate (/reportduplicate?id=5699311095513088) | Flag (/flagquestion?id=5699311095513088)

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Answers (/question?id=569931109)

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merge two binary search trees

(/question?id=5733590840115200) - mh4wt@virginia.edu (/user?id=5767014007177216) December 18, 2016 (2016-12-18T06:11:01.557390Z) in United States | Report Duplicate (/reportduplicate?id=5733590840115200) | Flag (/flagquestion?id=5733590840115200)

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3
Answers (/question?id=573359084)

You are given a binary tree. Each node in the tree is a house and the value of node is the cash present in the house. A thief can rob houses in alternate levels only. If thief decides to rob house at level 0 then he can rob houses in levels 2,4,6... or he can rob houses in levels 1,3,5,7...Find out the maximum possible amount thief can rob.

(/question?id=5701538572926976) - 256.cool (/user?id=5707907422224384) December 14, 2016 (2016-12-14T06:43:53.287830Z) in United States | Report Duplicate (/reportduplicate?id=5701538572926976) | Flag (/flagquestion?id=5701538572926976)

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2
Answers (/question?id=570153857)

Create a function to calculate the height of an n-ary tree.

(/question?id=5762815223660544) - theNightsKing16 (/user?id=5664716224462848) November 03, 2016 (2016-11-03T02:42:20.189670Z) in United States | Report Duplicate (/reportduplicate?id=5762815223660544) | Flag (/flagquestion?id=5762815223660544)

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14
Answers (/question?id=576281522)

From here : question?id=5660692209205248
In-order traversal:
A->B->C->D->E->F->H->L->M-P->R->S->T

Write a function (pseudo-code is fine) that given a starting node, advances to the next in-order node in a binary tree.
Please also provide a data-structure definition of a node.

(/question?id=5734782106337280) - NoOne (/user?id=5687896666275840) October 19, 2016 (2016-10-19T15:43:25.091100Z) in United States | Report Duplicate (/reportduplicate?id=5734782106337280) | Flag (/flagquestion?id=5734782106337280)

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2
Answers (/question?id=573478210)

Given an n-ary tree, find the longest sequence in it. The sequence doesn't end to start at the root. It can go from leaf to leaf.

0

10
Answers (/question?id=514081057)

(/question?id=5140810577215488) - ul (/user?id=5646877983768576) October 16, 2016 (2016-10-16T18:07:39.179520Z) in United States | Report Duplicate (/reportduplicate?id=5140810577215488) | Flag (/flagquestion?id=5140810577215488)

Need to traverse below n-ary in postorder and throw error message if the node are cyclic

Node001
/ | \
/ | \
/ \ \
Node002 Node003 Node004
/ / | \
/ / | \
Node005 Node006 Node007 Node008
/
/
Node009
\
\
Node003
In above case it should through error because Node009 has child Node003 which is derived from it.

(/question?id=5706319660056576) - sunny346 (/user?id=5759656040333312) October 13, 2016 (2016-10-13T05:33:30.176240Z) in United States | Report Duplicate (/reportduplicate?id=5706319660056576) | Flag (/flagquestion?id=5706319660056576)

0
Answers (/question?id=570631966

Hi Implemented this sample code for N-ary postOrder Traversal.
Now i want to throw error statement id the parent node is dependent on child.
Can some one help

```
package dependencyAlgorithm;
import java.util.*;


public class Dependency
{

class MainRule
{
String ruleName;
ArrayList<MainRule> subrule;
public MainRule(String name)
{
this.ruleName=name;
subrule=new ArrayList<>();
}

}

public static void postOrder(MainRule rootRule)
{

Stack<List<MainRule>> stack = new Stack<>();
MainRule rule = rootRule;
List<MainRule> list = null;
while (true)
{
if(rule != null)
{
list = rule.subrule;
for(int i=0;i<list.size();i++)
{
if(rule.ruleName == list.get(i).ruleName)
break;
}
rule = null;
if(list!=null && list.size()>0)
{
//push the list in the stack (do not modify original tree structure).
stack.push(new ArrayList<>(list));

//get first item from this list
rule = stack.peek().get(0);
System.out.print("\n1 ListSize: "+list.size());
}
}
else if (!stack.isEmpty())
{
System.out.print("\n2 \n");
list = stack.pop();
System.out.print("\n2 ListSize: "+list.size());
rule = list.remove(0); //shift left
System.out.print("\n2.1 ListSize: "+list.size());
```

1
Answer (/question?id=566098466

```
System.out.print("\n"+rule.ruleName+" ");
rule = null;
if(list.size()>0)
{
System.out.print("\n3 ListSize "+list.size());
stack.push(list); //push back remaining list into stack
rule = stack.peek().get(0); //prepare for next iteration
}
}
else
break;
}

System.out.println(rootRule.ruleName);
}
/*
Fml001
/ | \
/ | \
/ | \
Fml002 C001_Base Tot001
/ / | \
/ / | \
Fml003 Fml004 R001_Base R001_TxPat
/
/
Tot002
\
\
C001_TxPat
*/

public void createBinaryTree()
{
MainRule rootRule;
MainRule Fml001 =new MainRule("Fml001");
MainRule Fml002=new MainRule("Fml002");
MainRule Fml003=new MainRule("Fml003");
MainRule Fml004=new MainRule("Fml004");
MainRule C001_Base=new MainRule("C001_Base");
MainRule R001_Base=new MainRule("R001_Base");
MainRule Tot001=new MainRule("Tot001");
MainRule Tot002 =new MainRule("Tot002");
MainRule R001_TxPat =new MainRule("R001_TxPat");
MainRule C001_TxPat =new MainRule("C001_TxPat");
rootRule=Fml001;
rootRule.subrule.add(Fml002);
rootRule.subrule.add(C001_Base);
rootRule.subrule.add(Tot001);
Fml002.subrule.add(Fml003);
C001_Base.subrule.add(Fml004);
C001_Base.subrule.add(R001_Base);
C001_Base.subrule.add(R001_TxPat);
R001_Base.subrule.add(Tot002);
Tot002.subrule.add(C001_TxPat);
postOrder(rootRule);
}

public static void main(String[] args)
{
Dependency dependency=new Dependency();
// Creating a tree structure
System.out.println("Path Traversed:");
dependency.createBinaryTree();
}
}
```

Given two (binary) trees, return the first pair of non-matching leaves

Tree 1: A, B, C, D, E, null, null
Tree 2: A, D, B

Output: (E,B)

1
of 1 vote

15
Answers
(/question?
id=567324847
id=567324847

Given a undirected graph with weights, return the sum of the weight of each path between two nodes (shortest path between two vertices). Assume there are no cycles.
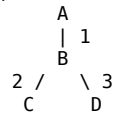
3
of 3 votes

23
Answers
(/question?
id=567989783

Example:

```
Input:
        A
        | 1
        B
    2 /   \ 3
     C      D


Output:
18
since
A to B has weight 1
A to C has weight 3
A to D has weight 4
B to C has weight 2
B to D has weight 3
C to D has weight 5
```

Edit: Thanks, wangchenClark0512, forgot about C to D
Edit2: @Lukas, The question is just the sum of the shortest paths between two vertices. Also, all edges are positive.
Edit3: Assume the graph has no cycles, did not get to the follow-up, but follow-up probably is probably change your algorithm so that is works for cycles

(/question?id=5679897813975040) - djway (/user?id=5667077504368640) August 18, 2016 (2016-08-18T04:05:25.571630Z) in United States | Report Duplicate (/reportduplicate?id=5679897813975040) | Flag (/flagquestion?id=5679897813975040)

Suggest a data structure and implement efficient phrase search along with word search in a huge chunk of text.

(/question?id=5084421972557824) - novicedhunnu (/user?id=5129565731028992) August 14, 2016 (2016-08-14T04:15:52.972620Z) in India for N/A | Report Duplicate (/reportduplicate?id=5084421972557824) | Flag (/flagquestion?id=5084421972557824)

3
Answers (/question?id=5084421972...

You are given a graph with no cycles, each node representing different cities and there are stadiums for baseball games in all cities.

Each node contains a value representing the population of the city, and a list of neighbors. (feel free to extend data structure)

Every time there is a baseball game at a city, everyone from all the different cities will go to the city with the baseball game.

Return the maximum traffic between a city and its neighbours when there is a game at that city, for all cities. (Does not have to be sorted)

The total run-time after returning everything should be O(n).

Examples:

38
Answers (/question?id=569504673...

```
Input:
1    2
 \  /
   5
 /  \
4    3
Output:
1 14
2 13
3 12
4 11
5 4

Input:
        38
        /
       8
       /
      7
      /
1    2
 \  / \
   5    15
 /  \
4    3
Output:
1 82
2 53
3 80
4 79
5 70
7 46
15 68
8 38
38 45
```

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