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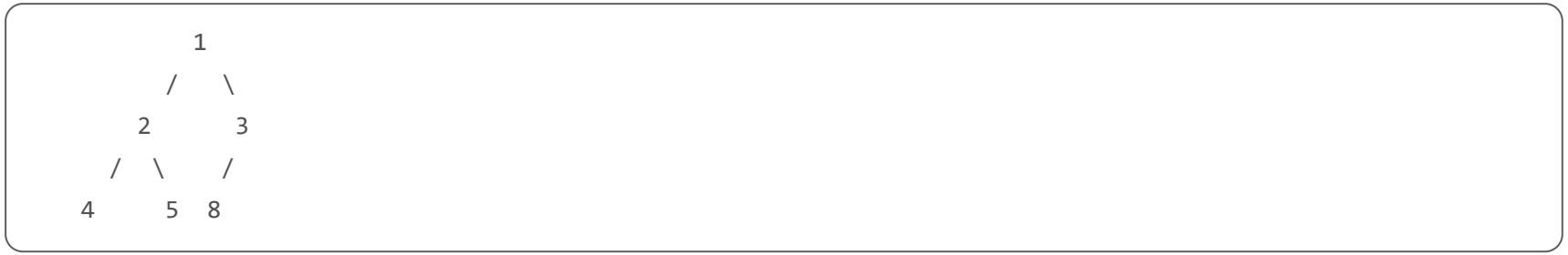
Print Nodes at K Distance

Given a root of a tree, and an integer k. Print all the nodes which are at k distance from root.
For example, in the below tree, 4, 5 & 8 are at distance 2 from root.



The problem can be solved using recursion. Thanks to eldho for suggesting the solution.

Implementation:

C++ Java

```
// Java program to print nodes at k distance from root

/* A binary tree node has data, pointer to left child
and a pointer to right child */
class Node
{
    int data;
    Node left, right;
```

```
    Node(int item)
    {
        data = item;
        left = right = null;
    }
}

class BinaryTree
{
    Node root;

    void printKDistant(Node node, int k)
    {
        if (node == null|| k < 0 )
            //Base case
            return;
        if (k == 0)
        {
            System.out.print(node.data + " ");
            return;
        }
    //recursively traversing
            printKDistant(node.left, k - 1);
            printKDistant(node.right, k - 1);

    }

    /* Driver program to test above functions */
```

```
    public static void main(String args[]) {
        BinaryTree tree = new BinaryTree();

        /* Constructed binary tree is
                1
            / \
            2    3
            / \ /
        4 5 8
        */
        tree.root = new Node(1);
        tree.root.left = new Node(2);
        tree.root.right = new Node(3);
        tree.root.left.left = new Node(4);
        tree.root.left.right = new Node(5);
        tree.root.right.left = new Node(8);

        tree.printKDistant(tree.root, 2);
    }
}

// This code has been contributed by Mayank Jaiswal
```


Output

```
4 5 8
```

Time Complexity: O(n) where n is number of nodes in the given binary tree.

Space Complexity : O(height of the binary tree).

Note-

- **If it's true print the node –** Always check the K distance == 0 at every node
- **the left or right subtree –** Decrement the distance by 1 when you are passing to its subtree