

Checking if a binary tree is a perfect binary tree in Python

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class newNode:
    def __init__(self, k):
        self.key = k
        self.right = self.left = None

# Calculate the depth
def calculateDepth(node):
    d = 0
    while (node is not None):
        d += 1
        node = node.left
    return d

# Check if the tree is perfect binary tree
def is_perfect(root, d, level=0):

    # Check if the tree is empty
    if (root is None):
        return True

    # Check the presence of trees
    if (root.left is None and root.right is None):
        return (d == level + 1)

    if (root.left is None or root.right is None):
        return False

    return (is_perfect(root.left, d, level + 1) and
            is_perfect(root.right, d, level + 1))

root = None
root = newNode(1)
root.left = newNode(2)
root.right = newNode(3)
root.left.left = newNode(4)
root.left.right = newNode(5)

if (is_perfect(root, calculateDepth(root))):
    print("The tree is a perfect binary tree")
else:
    print("The tree is not a perfect binary tree")
```

☞ The tree is not a perfect binary tree