UCS 1302 Data Structures

Tutorial 2 on Trees

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1. Write algorithms for the following and trace them

1. Depth(T,n) 🡪 Returns the depth of node ‘n’ in Tree ‘T’
2. Parent(T,n) 🡪 Returns the Parent of node ‘n’ in Tree ‘T’

2. Given the root of a binary tree with unique values and the values of two different nodes of the tree x and y, return true *if the nodes corresponding to the values* x *and* y *in the tree are* ***cousins****, or* false *otherwise.*

Two nodes of a binary tree are **cousins** if they have the same depth with different parents.

Note that in a binary tree, the root node is at the depth 0, and children of each depth k node are at the depth k + 1. (K3, CO3)

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| **Example 1**    **Input:** x = 4, y = 3  **Output:** false | **Example 2**    **Input:** x = 5, y = 4  **Output:** true |
| **Example 3**    **Input:** x = 2, y = 3  **Output:** false |  |