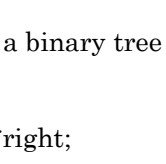
LCA in C++

```
#include <iostream>
using namespace std;

// Definition of a binary tree node
struct Node {
    int data;
    Node *left, *right;

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

// Function to find the Lowest Common Ancestor
(LCA) of two nodes
Node* getLCA(Node* root, int a, int b) {
    if (root == nullptr) {
        return nullptr;
    }
    if (root->data == a || root->data == b) {
        return root;
    }

    Node* lca1 = getLCA(root->left, a, b);
    Node* lca2 = getLCA(root->right, a, b);

    if (lca1 != nullptr && lca2 != nullptr) {
        return root;
    }
    if (lca1 != nullptr) {
        return lca1;
    } else {
        return lca2;
    }
}

// Function to create a binary tree and find LCA
int main() {
    // Hardcoded tree construction
    Node* root = new Node(6);
    root->left = new Node(3);
    root->right = new Node(8);
    root->right->left = new Node(7);
    root->right->right = new Node(9);

    // Find LCA of nodes 3 and 7
    Node* lcaNode = getLCA(root, 3, 7);
    cout << "Lowest Common Ancestor of 3 and 7 is: "
<< lcaNode->data << endl;

    // Clean up dynamically allocated memory
    delete root->right->right;
    delete root->right->left;
    delete root->left;
    delete root;
    return 0;
}
```

Tree Structure:



You're finding the **LCA of 3 and 7**.

🔍 Dry Run of getLCA(root, 3, 7):

Function Call	Returns	Reason
getLCA(6, 3, 7)	→ 6	Found 3 in left subtree, 7 in right subtree → current is LCA
├── getLCA(3, 3, 7)	→ 3	root->data == a (found node 3)
└── getLCA(8, 3, 7)	→ 7	found 7 in left subtree, right subtree (9) doesn't contain target
├── getLCA(7, 3, 7)	→ 7	root->data == b (found node 7)
└── getLCA(9, 3, 7)	→ nullptr	no match

✅ Output:

Lowest Common Ancestor of 3 and 7 is: 6

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