

## Intuition

The recursion works by first generating all possible full binary trees with  $i$  nodes, and then all possible full binary trees with  $n - i - 1$  nodes. For each pair of trees, a new tree is created with the first tree as the left subtree and the second tree as the right subtree. This process is repeated until all possible trees with  $n$  nodes have been generated.

## Approach

1. Initialize a hash table to store the generated trees.
2. If  $n$  is even, return an empty list.
3. If  $n$  is 1, add a new tree to the hash table.
4. For  $i$  from 1 to  $n - 1$ , do:
  - Generate all possible full binary trees with  $i$  nodes.
  - Generate all possible full binary trees with  $n - i - 1$  nodes.
  - For each pair of trees, create a new tree with the first tree as the left subtree and the second tree as the right subtree.
  - Add the new tree to the hash table.
5. Return the list of trees in the hash table.

## Complexity

- Time complexity:  $O(2^n)$
- Space complexity:  $O(n)$