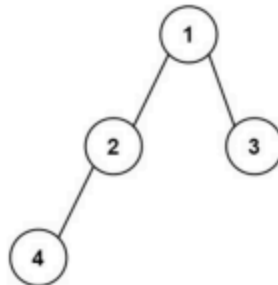A **PARENTHESIS REPRESENTATION** of a binary tree is a string consisting of parentheses and integers (separated by spaces) representing a binary tree. The representation should be based on a preorder traversal of the binary tree and must adhere to the following guidelines:

- Each node in the tree should be represented by its integer value.
- Parentheses for Children: For every node (either left or right), its children should be represented inside parentheses. Specifically:
    - If a node has a left child, the value of the left child should be enclosed in parentheses immediately following the node's value.
    - If a node has a right child, the value of the right child should also be enclosed in parentheses. The parentheses for the right child should follow those of the left child.
- Empty parentheses are in the string when a node has an empty left or right child, except for leaf nodes.

For example, consider the given binary tree


```
Parentheses
representation : 1(2(4)())(3)
```