

SOURCE CODE 1. Binärbaum: Im Wesentlichen die Wurzel.

```
class BinaryTree:  
    """Basically, a BinaryTree is defined by its root  
(and all the subtrees pending from it)."""  
    def __init__(self, key, data = None, parent = None, node_type = "root"):  
        """Initialize: Either with existing BinaryTreeNode,  
        or with key."""  
        if isinstance(key, BinaryTreeNode):  
            self.root = key  
        else:  
            self.root = BinaryTreeNode(key, data=data)  
  
    def __str__(self):  
        return f'BinaryTree (root: {self.root})'  
  
    # Search depth-first for key:  
    def df_search_subtree(self, key):  
        return self.root.df_search_subtree(key)  
  
    # Traverse the tree depth-first and apply a function which  
    # takes (node, level_of_node) as arguments  
    def df_traverse(self, the_func, level, account):  
        self.root.df_traverse(the_func, level, account)  
  
    # Traverse the tree (starting at root) breadth-first and apply  
    # a function which takes (node, level_of_node, number_of_node)  
    # and an optional "account" (in most cases: a dictionary to be  
    # updated by the nodes) as arguments:  
    def bf_traverse(self, the_func, account):  
        self.root.bf_traverse(self, the_func, account=account)  
  
    # Der Baum muss verändert werden können, durch Anhängen oder  
    # Löschen von Blättern:  
    def append_leaf(self, child, parent_key, side="left"):  
        # Find the node parent_key:  
        if (parent_node := self.df_search_subtree(parent_key)) is None:  
            print(f"Key {parent_key} not found!")  
            return  
        # Implicit else:  
  
        # Fügen Sie hier bitte geeignete Codezeilen ein!  
  
    def delete_leaf(self, key):  
        """Find and delete leaf with key."""  
        # Find the node key:  
        if (node := self.df_search_subtree(key)) is None:  
            print(f"No node {key} in binary tree!")  
            return  
        # Implicit else:
```

Fügen Sie hier bitte geeignete Codezeilen ein!