# 序列化二叉树

## 题目

请实现两个函数，分别用来序列化和反序列化二叉树

## 解题思路

1. 通过前序遍历，进行序列化和反序列化
2. 对于空节点用 $ 来代替

String Serialize(TreeNode root) {
 if (root==null) return "";

 LinkedList<String> res = new LinkedList<>();

 serialize(res, root);

 StringBuilder builder = new StringBuilder();
 res.forEach(v-> builder.append(v).append(","));

 return builder.toString();
}

private void serialize(LinkedList<String> res, TreeNode root) {
 if (root == null) {
 res.addLast("$");
 return;
 }

 res.addLast(String.valueOf(root.val));
 serialize(res, root.left);
 serialize(res, root.right);
}

TreeNode Deserialize(String str) {
 if (str == null || str.length() == 0) return null;

 return deserialize(str.split(","), new int[]{0});
}

private TreeNode deserialize(String[] str, int[] index) {
 if (index[0] >= str.length) return null;

 String c = str[index[0]++];
 if (c.equals("$")) return null;

 TreeNode node = new TreeNode(Integer.valueOf(c));
 node.left = deserialize(str, index);
 node.right = deserialize(str, index);

 return node;
}