SQL Advanced Select

Binary Tree Nodes

Problem Statement

You are given a table, BST, containing two columns: N and P, where N represents the value of a node in Binary Tree, and P is the parent of N.

Column	Type
N	Integer
P	Integer

Write a query to find the node type of Binary Tree ordered by the value of the node. Output one of the following for each node:

- Root: If node is root node.
- Leaf: If node is leaf node.
- Inner: If node is neither root nor leaf node.

Sample Input

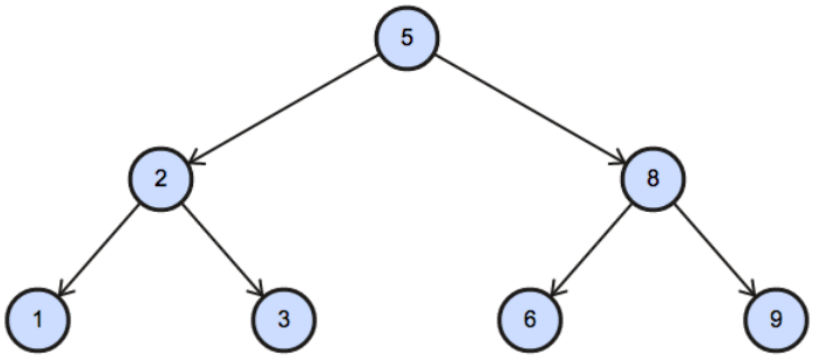
N	P
1	2
3	2
6	8
9	8
2	5
8	5

Sample Output

```
1 Leaf
2 Inner
3 Leaf
5 Root
6 Leaf
8 Inner
9 Leaf
```

Explanation

The Binary Tree below illustrates the sample:



Code

```
SELECT N, CASE WHEN P IS NULL THEN 'Root'
WHEN(SELECT COUNT(*) FROM BST WHERE P = A.N) > 0 THEN 'Inner'
ELSE 'Leaf'
END
FROM BST A
ORDER BY N;
```