

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.

<i>Column</i>	<i>Type</i>
<i>N</i>	<i>Integer</i>
<i>P</i>	<i>Integer</i>

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

Sample Input

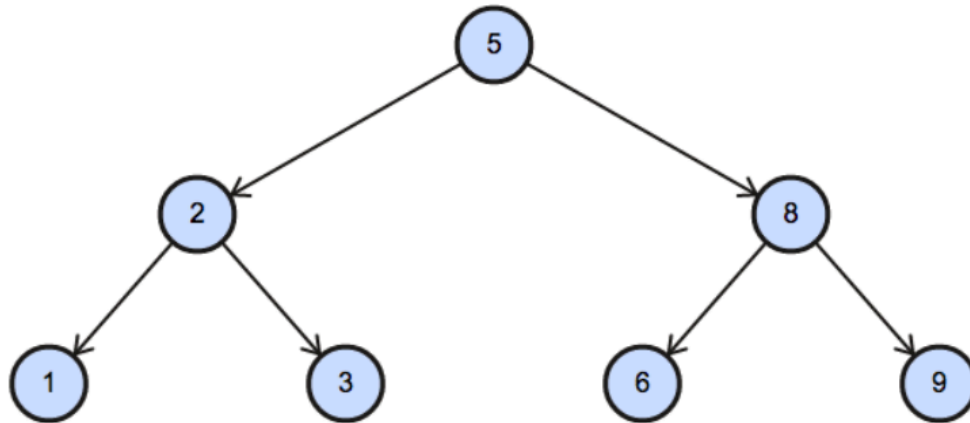
<i>N</i>	<i>P</i>
1	2
3	2
6	8
9	8
2	5
8	5
5	<i>null</i>

Sample Output

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

Explanation

The Binary Tree below illustrates the sample:



```
SELECT CASE
  WHEN P IS NULL THEN CONCAT(N, " Root")
  WHEN N IN (SELECT P FROM BST) THEN CONCAT(N, ' Inner')
  ELSE CONCAT(N, " Leaf")
END
FROM BST
ORDER BY N ASC
```

