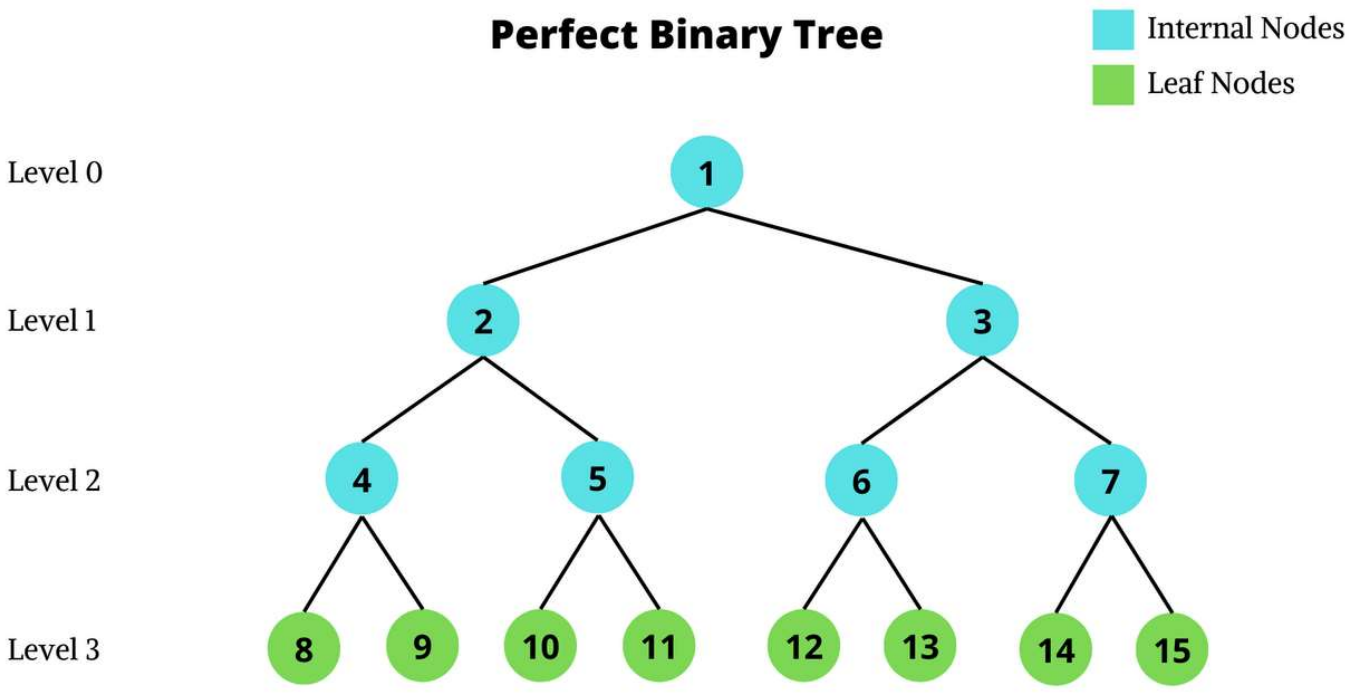
Perfect Binary Tree

Problem Statement

You will be given a binary tree as input in level order. You need to tell if the binary tree is perfect or not. A binary tree is called perfect if all leaf nodes are at the maximum depth of the tree, and the tree is completely filled with no gaps.

Here is an example of perfect binary tree:



Also there is formula available to tell if a binary tree is perfect or not. The formula is :

- Total number of nodes = $2^{maxDepth}$-1

Note: Here depth is counted from 1. In the above image maximum depth is 4, so total number of nodes are $2^4 - 1 = 15$. So there should be 15 nodes to call it a perfect binary tree.

Input Format

- Input will contain the binary tree in level order. -1 means there is no node available.

Constraints

1. $1 \leq$ Maximum number of nodes $\leq 10^5$

2. $1 \leq$ Node's value ≤ 1000

Output Format

- Output YES if the tree is perfect, NO otherwise.

Sample Input 0

```
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
```

Sample Output 0

```
YES
```

Sample Input 1

```
10 20 30 40 -1 60 -1 -1 -1 -1 -1
```

Sample Output 1

```
NO
```

Sample Input 2

```
10 20 -1 -1 -1
```

Sample Output 2

```
NO
```

Sample Input 3

```
10 20 30 40 50 60 70 -1 -1 -1 -1 -1 -1 -1 -1
```

Sample Output 3

```
YES
```

```
6
7  int main()
8  {
9      // Write your code here
10
11     return 0;
12 }
13
```

Line: 1 Col: 1

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