

# 1443. Minimum Time to Collect All Apples in a Tree

Medium

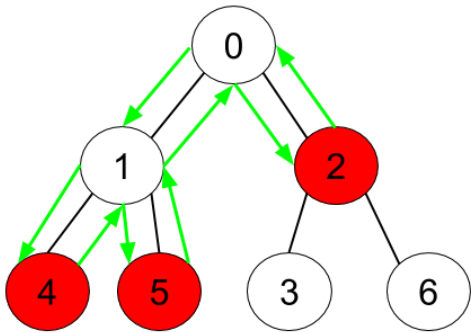
🏷️ Topics

🏢 Companies

💡 Hint

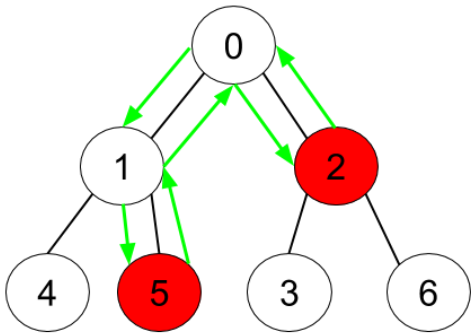
Given an undirected tree consisting of  $n$  vertices numbered from  $0$  to  $n-1$ , which has some apples in their vertices. You spend 1 second to walk over an edge of the tree. You want to collect all apples in the tree. You can start at any vertex in the tree. You walk over an edge  $0$  time if the other vertex of the edge is your current vertex. You walk over an edge  $1$  time if the other vertex of the edge is not your current vertex. The edges of the undirected tree are given in the array `edges`, where `edges[i] = [ai, bi]` means that exists an edge connecting the vertex  $a_i$  and  $b_i$ .

Example 1:



**Input:** `n = 7, edges = [[0,1],[0,2],[1,4],[1,5],[2,3],[2,6]], hasApple = [false,false,true,false,true,true]`  
**Output:** 8  
**Explanation:** The figure above represents the given tree where red vertices have an apple. One optimal way to collect all apples is to start at vertex 0, go to vertex 1, then to vertex 4, then to vertex 5, then back to vertex 1, then back to vertex 0, then to vertex 2, then to vertex 3, then to vertex 6, and finally back to vertex 2. The total time spent is 8 seconds.

Example 2:



**Input:** `n = 7, edges = [[0,1],[0,2],[1,4],[1,5],[2,3],[2,6]], hasApple = [false,false,true,false,false,false]`  
**Output:** 6  
**Explanation:** The figure above represents the given tree where red vertices have an apple. One optimal way to collect all apples is to start at vertex 0, go to vertex 1, then to vertex 5, then back to vertex 1, then back to vertex 0. The total time spent is 6 seconds.

Example 3:

**Input:** `n = 7, edges = [[0,1],[0,2],[1,4],[1,5],[2,3],[2,6]], hasApple = [false,false,false,false,false,false]`  
**Output:** 0

### Constraints:

- $1 \leq n \leq 10^5$
- `edges.length == n - 1`
- `edges[i].length == 2`
- $0 \leq a_i < b_i \leq n - 1$
- `hasApple.length == n`

Seen this question in a real interview before? 1/4

Yes No

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