



Hello, 2024101067.

Arush and the wrong algorithm

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C, C++

Arush was trying to solve the vertex cover problem on trees. The problem statement is:

Given an undirected tree consisting of n nodes, find the minimum number of vertices that cover all the edges. Formally, we need to find a set of vertices such that for each edge (u, v) that belongs to the tree, either u is in the set, or v is in the set, or both are in the set. Arush has found the following algorithm:

1. Root the tree at node 1.
2. Count the number of nodes at an even depth. Let it be `evenCnt`.
3. Count the number of nodes at an odd depth. Let it be `oddCnt`.
4. The answer is the minimum between `evenCnt` and `oddCnt`.

The depth of a node in a tree is the number of edges in the shortest path between this node and the root. The depth of the root is 0.

Sriteja told Arush that this algorithm is wrong, but Arush didn't believe him because he had tested his algorithm against many trees and it worked. So Sriteja asked you to find 2 trees consisting of n nodes such that the algorithm produces an incorrect answer for the first tree and a correct answer for the second tree.

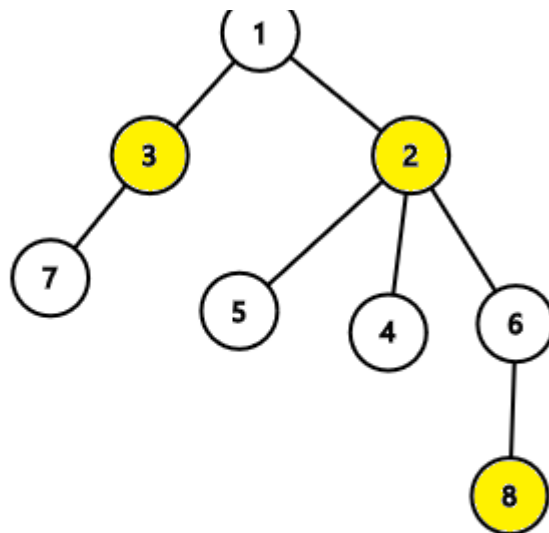
For clarification, consider the following illustrations:

- The algorithm **works** in this tree:

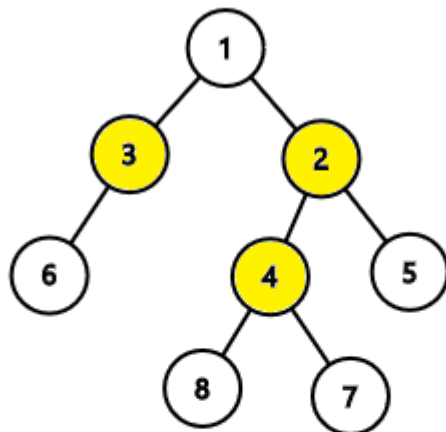




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- The algorithm **doesn't work** in this tree:



Input

The only line contains an integer n ($2 \leq n \leq 2000$), the number of nodes in the desired trees.

Output

The output should consist of 2 independent sections, each describing a tree.

- For a section where a valid tree exists, print its **lexicographically smallest adjacency matrix**. An adjacency matrix of an n -node tree is an $n \times n$ matrix where the j -th element in the i -th row is 1 if there is an



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- If a tree does not exist for a section, output `-1` (without quotes) for that section only.

If the given graph is not a tree or does not follow the format, you will receive a wrong answer verdict.

Sample Input

```
2
```

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Sample Output

```
-1
0 1
1 0
```

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Explanation

In the first section, there is only one tree with 2 nodes (node 1 connected to node 2), and the algorithm will produce a correct answer on it. Thus, we print `-1` for the first section. In the second section, we print the adjacency matrix of the only tree with 2 nodes.

? Clarifications

[Request clarification](#)

No clarifications have been made at this time.