CODEFORCES$^{\beta}$
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PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   HACKS   ROOM   STANDINGS   CUSTOM INVOCATION

D. Valid Sets

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

As you know, an undirected connected graph with n nodes and n - 1 edges is called a *tree*. You are given an integer d and a tree consisting of n nodes. Each node i has a value a_i associated with it.

We call a set S of tree nodes *valid* if following conditions are satisfied:

1. S is non-empty.
2. S is connected. In other words, if nodes u and v are in S, then all nodes lying on the simple path between u and v should also be presented in S.
3. $\max_{u \in S} a_u - \min_{v \in S} a_v \le d$.

Your task is to count the number of valid sets. Since the result can be very large, you must print its remainder modulo 1000000007 ($10^9 + 7$).

Input

The first line contains two space-separated integers d ($0 \le d \le 2000$) and n ($1 \le n \le 2000$).

The second line contains n space-separated positive integers $a_1, a_2, ..., a_n (1 \le a_i \le 2000)$.

Then the next n - 1 line each contain pair of integers u and v ($1 \le u, v \le n$) denoting that there is an edge between u and v. It is guaranteed that these edges form a tree.

Output

Print the number of valid sets modulo 1000000007.

Examples

input
```
1 4
2 1 3 2
1 2
1 3
3 4
```
output
```
8
```

input
```
0 3
1 2 3
1 2
2 3
```
output
```
3
```

input
```
4 8
7 8 7 5 4 6 4 10
```

Codeforces Round #277 (Div. 2)

Finished

Practice

⭐

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest]

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Submit?

Language: [GNU G++ 5.1.0   ▼]
Choose file: [Choose File] No file chosen

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

[Submit]

→ Problem tags

dfs and similar   dp   math   trees
No tag edit access

→ Contest materials

- Announcement   ✕
- Tutorial   ✕

```
1 6
1 2
5 8
1 3
3 5
6 7
3 4
```

output

```
41
```

Note

In the first sample, there are exactly 8 valid sets:

$\{1\}, \{2\}, \{3\}, \{4\}, \{1, 2\}, \{1, 3\}, \{3, 4\}$ and $\{1, 3, 4\}$. Set $\{1, 2, 3, 4\}$ is not valid, because the third condition isn't satisfied. Set $\{1, 4\}$ satisfies the third condition, but conflicts with the second condition.