Company Retreat

The *LRT Company* has n employees. Each employee has a unique ID number from 1 to n, where the director's ID is number 1. Every employee in the company has *exactly one* immediate supervisor — except the director, who has no supervisor. The company's employee hierarchy forms a tree of employee IDs that's rooted at employee number 1 (the director).

The director decides to have a retreat lasting m days. Each day, the employees will be assigned to different groups for team building exercises. Groups are constructed in the following way:

- An employee can invite their immediate supervisor (the director has no supervisor and, thus, doesn't invite anyone). If employee a is invited by employee b, then a and b are considered to be in the same group.
- Once an employee is invited to be in a group, they are in that group. This means that if two employees have the same immediate supervisor, only one of them can invite that supervisor to be in their group.
- Every employee must be in a group, even if they are the only employee in it.

The venue where *LRT* is hosting the retreat has different pricing for each of the m days of the retreat. For each day j, there is a cost of d_j dollars per group and a per-group size limit of p_j (i.e., the maximum number of people that can be in any group on that day).

Help the director find optimal groupings for each day so the cost of the m-day retreat is minimal, then print the total cost of the retreat. As this answer can be quite large, your answer must be modulo $10^9 + 7$.

Input Format

The first line contains two space-separated integers denoting the respective values of n (the number of employees) and m (the retreat's duration in days).
The next line contains $n-1$ space-separated integers where each integer i denotes s_i ($1 < i \leq n$), which is the ID number of employee i's direct supervisor.
Each line j of the m subsequent lines contain two space-separated integers describing the respective values of d_j (the cost per group in dollars) and p_j (the maximum number of people per group) for the j^{th} day of the retreat.

Constraints

- $1 \leq n, m \leq 10^5$
- $1 \leq s_i \leq n$
- $1 \leq d_j, p_j \leq 10^9$

Subtask

- $1 \leq n, m \leq 2000$ for 40% of the maximum possible score.

Output Format

Print a single integer denoting the minimum total cost for the m-day retreat. As this number can be quite large, print your answer modulo $10^9 + 7$.

Sample Input

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7 3
1 1 3 4 2 4
5 3
6 2
1 1
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Sample Output

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46
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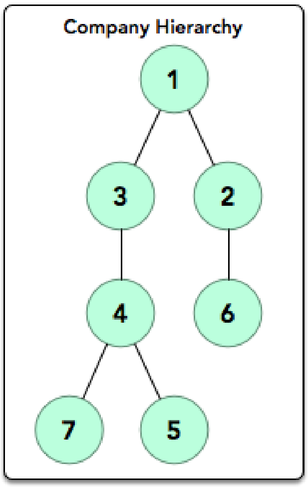
Explanation

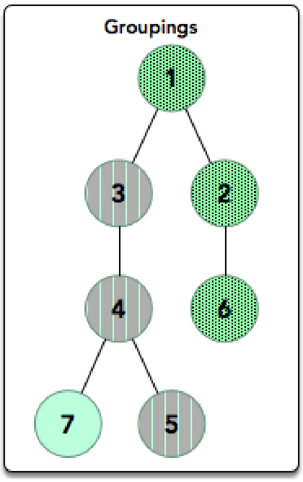
In the *Sample Case* above, the company has 7 employees and the retreat goes on for 3 days. The hierarchy looks like this:



On the first day, the cost per group is 5 dollars and each group has a maximum size of 3. The employees split into the following three groups:

1. Employee 6 invites their manager, employee 2. Employee 2 then invites their manager, employee 1 (the director).
2. Employee 5 invites their manager, employee 4. Employee 4 then invites their manager, employee 3.
3. Employee 7's manager is already in another group, so they are in a group by themself.

These groupings are demonstrated in the following image where each group has a different pattern:



In other words, the final groups are $\{1, 2, 6\}$, $\{3, 4, 5\}$, and $\{7\}$. This means the total cost for the first day is $groups \times cost = 3 \times 5 = 15$ dollars.

On the second day, they split into 4 groups with a maximum size of 2 at a total cost of 24 dollars. On the third day, they split into 7 groups of size 1 at a total cost of 7 dollars. When we sum the costs for all three days, we get $15 + 24 + 7 = 46 \ \% \ (10^9 + 7) = 46$ as our answer.