Determination

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Chiaki has an $n \times n$ matrix M defined as follows.

1. $M_{i,i} = d_i$ for each $i \in \{1, 2, \ldots, n\}$,
2. $M_{p_i,i} = a_i$, $M_{i,p_i} = b_i$ for each $i \in \{2, 3, \ldots, n\}$,
3. $M_{i,j} = x$, otherwise.

Given the value of d_i, p_i, a_i, b_i and x, find $\det(M)$ modulo $(10^9 + 7)$.

Input

There are multiple test cases. The first line of the input contains an integer T ($1 \leq T \leq 10^6$), indicating the number of test cases. For each test case:

The first line contains two integers n and x ($1 \leq n \leq 10^6$, $0 \leq x \leq 10^9$). The second line contains n integers $d_1, d_2, \ldots, d_n$ ($0 \leq d_i \leq 10^9$). The i-th of the following $(n-1)$ lines contains three integers $p_{i+1}, a_{i+1}, b_{i+1}$ ($1 \leq p_{i+1} \leq i$, $0 \leq a_{i+1}, b_{i+1} \leq 10^9$).

The sum of all n does not exceed 10^6.

Output

For each test case, output an integer denoting the answer.

Example

standard input	standard output
3 1 23333 233 3 1 1 1 1 1 2 3 1 4 5 3 1 2 3 4 1 4 5 2 6 7	233 1000000003 999999923