Problem F
Heaps of Fun

Consider a rooted tree with n nodes, numbered $1..n$. Each node will have a fixed integer b, and for each, a uniform random real number is chosen in the interval $[0..b]$.

What is the probability that the random numbers chosen cause the tree to form a *Heap* (i.e., the random value in each node is less than the random values in its children)?

This probability can always be expressed as a rational number $\frac{P}{Q}$, with $Q \not\equiv 0 \pmod{10^9+7}$. You are to output the probability as $P \cdot Q^{-1} \bmod 10^9+7$, where Q^{-1} is an integer, which is the multiplicative inverse of Q modulo 10^9+7 ($Q \cdot Q^{-1} \equiv 1 \pmod{10^9+7}$). (Note: $P \cdot Q^{-1} \bmod 10^9+7$ does not depend on whether P and Q are relatively prime, only on their ratio $\frac{P}{Q}$.)

Input

Each test case will begin with a line with a single integer n ($1 \le n \le 300$), which is the number of nodes in the tree.

Each of the next n lines will contain a pair of space-separated integers b ($1 \le b \le 10^9$) and p ($0 \le p \le n$) describing a node of the tree, where b is the fixed integer value in the node and p is the node number of its parent. The nodes are listed in order; node 1 is first, then node 2, and so on. A single node will have a parent p=0. This is the root of the tree.

Output

Output a single integer, which is the probability expressed as $(P \cdot Q^{-1}) \bmod (10^9+7)$.

Sample Input 1	Sample Output 1
2 1000000000 0 1000000000 1	500000004

Sample Input 2	Sample Output 2
5 2 3 2 3 1 0 2 3 2 3	87500001