Problem F. Dense Subgraph

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	512 mebibytes

You have a tree on n vertices. Each vertex v has weight a_v, and its degree is at most 5.

The **density** of a subset S of vertices is the value

$$\frac{\sum\limits_{v \in S} a_v}{|S|}.$$

Consider a subset L of the tree vertices. The **beauty** of L is the maximum **density** of S such that it is a subset of L, contains at least two vertices and forms a connected induced subgraph, or 0 if no such S exists.

There are 2^n ways to choose L. How many such L have their **beauty** no larger than x? As the answer can be very large, find it modulo $1\,000\,000\,007$.

Input

The input contains several test cases, and the first line contains a single integer T ($1 \le T \le 30$): the number of test cases.

The first line of each test case contains two integers n ($2 \le n \le 35\,000$) and x ($0 \le x \le 35\,000$): the number of vertices and the constraint on the beauty.

The next line contains n integers $a_1, a_2, \ldots, a_n$ ($0 \le a_i \le 35\,000$): the weights of the tree vertices.

Each of the next $n - 1$ lines contains two integers u and v ($1 \le u, v \le n$), describing an edge connecting vertices u and v in the tree.

It is guaranteed that the given graph is a tree. **It is also guaranteed that each vertex has degree at most 5.**

Output

For each test case, output a line containing a single integer: the number of ways to choose such a subset L of tree vertices that the **beauty** of L is no larger than x, modulo $1\,000\,000\,007$.

Example

standard input	standard output
2 5 0 1 1 1 1 1 1 2 2 3 3 4 4 5 3 2 2 1 3 1 2 1 3	13 6