Problem F. Fantasia

Input file:	*standard input*
Output file:	*standard output*
Time limit:	7.5 seconds
Memory limit:	64 mebibytes

Professor Zhang has an undirected graph G with n vertices and m edges. Each vertex has an integer weight w_i. Let G_i be the graph obtained by deleting the i-th vertex from graph G. Professor Zhang wants to find the weights of $G_1, G_2, \ldots, G_n$.

The weight of a graph G is defined as follows:

- If G is connected, then the weight of G is the product of the weight of each vertex in G.
- Otherwise, the weight of G is the sum of the weights of all the connected components of G.

A connected component H of an undirected graph G is a subgraph in which any two vertices are connected by a path, and no other vertex in G is connected to any vertex from H by a path.

Input

There are multiple test cases. The first line of input contains an integer T indicating the number of test cases. For each test case:

The first line contains two integers n and m ($2 \le n \le 10^5$, $1 \le m \le 2 \cdot 10^5$): the number of vertices and the number of edges.

The second line contains n integers $w_1, w_2, \ldots, w_n$ ($1 \le w_i \le 10^9$) denoting the weight of each vertex.

Each of the next m lines contains two integers x_i and y_i ($1 \le x_i, y_i \le n$, $x_i \ne y_i$) denoting an undirected edge.

There are at most 1000 test cases, the sum of n in all the test cases is at most $1.5 \cdot 10^6$, and the sum of m in all the test cases is also at most $1.5 \cdot 10^6$.

Output

For each test case, output the integer $S = (\sum_{i=1}^{n} i \cdot z_i)$ modulo $10^9 + 7$, where z_i is the weight of G_i.

Example

standard input	standard output
1 3 2 1 2 3 1 2 2 3	20