Problem I. Optimal Choice

Input file:	`independent.in`
Output file:	`independent.out`
Time limit:	1 second
Memory limit:	256 mebibytes

You are given a connected undirected graph. Each vertex has a certain weight W_i and, moreover, belongs to no more than one simple cycle. You are to find the maximum-weight independent set: a set of vertices in the graph such that no two vertices in the set are adjacent, and their total weight is the maximum possible.

Input

The first line of input contains the number of vertices N ($1 \le N \le 100\,000$) and the number of edges M ($0 \le M \le 200\,000$) of the graph. The second line contains N integers W_i ($1 \le W_i \le 1000$) which are the weights of the vertices. The next M lines describe the edges as pairs of integers u_i, v_i where $1 \le u_i, v_i \le N$ and $u_i \ne v_i$. There is at most one edge between any pair of vertices.

It is guaranteed that the graph is connected and each vertex belongs to no more than one simple cycle.

Output

Output the maximum weight of the independent set.

Example

independent.in	independent.out
4 4 5 1 1 5 1 2 2 3 3 1 1 4	6