Bot Friends 2

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

Little Cyan Fish is commanding your favorite bot friends on a map. The map is represented as a connected undirected graph with n vertices and m edges. The vertices are labeled from 1 to n, and the i-th vertex has weight a_i. The edges are labeled from 1 to m, and the i-th edge has weight w_i.

Initially, there are n bots, one on each vertex: the i-th bot is placed on vertex i. On each day, Little Cyan Fish may perform any number of the following operations:

- Choose a bot x currently on vertex u, and an incident edge (u, v) with weight w. Move the bot from u to v. This operation costs w dollars.
- Choose two bots x and y currently on the same vertex u. Merge them into a single bot. This operation costs a_u dollars.

Little Cyan Fish really wants to make you happy, but... Well, you only love one bot. Therefore, Little Cyan Fish must merge all bots into a single bot. Help him find the minimum total cost of operations required to achieve this!

Input

There are multiple test cases in a single test file. The first line of the input contains an integer T ($T \geq 1$) indicating the number of test cases. For each test case:

The first line of the input contains two integers n and m ($n \geq 1$), indicating the number of vertices and the number of edges.

The next line of the input contains n integers $a_1, a_2, \ldots, a_n$ ($1 \leq a_i \leq 10^{12}$), indicating the weight of each vertex.

The next m lines of the input describe all the edges. The i-th line of these lines contains three integers u_i, v_i, and w_i ($1 \leq u_i, v_i \leq n$, $1 \leq w_i \leq 10^9$, $u_i \neq v_i$), indicating an edge connecting the vertex u_i and v_i. It is guaranteed that the graph is connected, but there might be multiple edges connecting the same pair of vertices.

It is guaranteed that the sum of n over all test cases will not exceed 5×10^5, and the sum of m over all test cases will not exceed 10^6.

Output

For each test case, output a single line containing a single integer, indicating the minimum total cost required to merge all the bots into a single bot you love.

It can be proven that there will always be a valid plan under the constraints of the problem.

Example

standard input	standard output
3 4 4 2 3 7 1 1 2 3 1 3 1 2 3 2 3 4 2 5 4 100000 100000 100000 100000 1 1 2 10 2 3 100 3 4 1000 4 5 10000 1 0 1000000000	12 43214 0