Parade

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Sprinkles has been tasked with designing the route for Sydney's Mardi Gras parade. There are n junctions and m two-way roads connecting pairs of junctions. The route must start at junction 1 and end at junction n, following some sequence of roads. A road may be followed more than once.

There is an additional constraint for the route: it must be fabulous. Each road has been painted in one of the k colours of the rainbow. A route is said to be fabulous if and only if it includes at least one road of each colour.

Finally, Sydney is known to be hilly. Each junction has a given elevation, and travelling along a road from a lower junction to a higher junction (uphill) causes exhaustion equal to the change in elevation. Note that travelling downhill does not cause any (positive or negative) exhaustion. The total exhaustion of a route is the sum of exhaustion along each road comprising that route. The parade route should reduce exhaustion as much as possible, to ensure that the attendees can focus their energy on partying.

Help Sprinkles find the minimum exhaustion possible along a fabulous parade route.

Input

The first line of input consists of three space-separated integers n, m and k ($2 \leq n \leq 10,000$, $1 \leq m \leq 10,000$), representing the number of junctions, roads and colours respectively.

The second line of input consists of n space-separated integers $h_1, \ldots, h_n$ ($0 \leq h_i \leq 100,000$), the ith of which represents the elevation of the ith junction.

m lines follow, each describing one road. The jth such line consists of three space-separated integers a_j, b_j and c_j ($1 \leq a_j < b_j \leq n$), representing the two junctions connected by the road and the colour of the road respectively.

Output

Print the minimum total exhaustion that can be incurred on a fabulous route.

If there are no fabulous routes, print `-1`.

Scoring

For Subtask 1 (50 points):

- $k = 2$,
- $c_1 = \ldots = c_{m-1} = 1$, and
- $c_m = 2$.

For Subtask 2 (50 points):

- $2 \leq k \leq 6$.
- $1 \leq c_1, \ldots, c_m \leq k$.

Examples

standard input	standard output
5 4 2 10 20 30 10 40 1 2 1 2 3 1 3 5 1 3 4 2	50
5 3 2 10 20 30 10 40 1 2 1 3 5 1 3 4 2	-1
6 6 4 60 50 40 30 20 10 1 3 4 3 4 2 3 5 1 2 4 1 2 6 3 5 6 2	20

Note

In the first sample case, the route 1 — 2 — 3 — 4 — 3 — 5 uses colour 1 four times and colour 2 twice, and incurs exhaustion of 10, 10, 0, 20 and 10 on its five roads.

In the second sample case, the parade can only reach junctions 1 and 2, so it is not possible to make any route, let alone a fabulous one.

In the third sample case, the route 1 — 3 — 4 — 2 — 6 uses each colour once, and only the third road is uphill so the others contribute no exhaustion.

Note that only the first two sample cases comply with the constraints of Subtask 1.