Scoazze

Input file:	standard input
Output file:	standard output
Time limit:	0.5 seconds
Memory limit:	64 megabytes

Carlo, as many other people in Provincia di Treviso, produces a lot of rubbish with each activity he carries out during his day.

Still, he is a strong advocate of separate waste collection, and for this reason he has N trash bins at home, indexed from 0 to $N - 1$, each one for a different type of garbage (plastic, cans, glass, ...).

Every trash bin has a capacity of C_i bags, that can never be exceeded, otherwise Treviso's image would be hurt.

Fortunately, every night the S.A.V.N.O., garbage truck passes by and can completely empty a **single continuous interval** of trash cans, removing all of their contents. Note that the garbage truck can clear at most one interval per night.
Obviously, such a great service comes at a cost (the waste-tax): the price of clearing an interval is the **sum of the unused capacities** for each trash bin in that interval.

More formally, if U_i is the number of bags in the i-th trash bin, the price of emptying an interval $[L, R]$ is: $\sum_{i=L}^{R} C_i - U_i$.

Carlo, after struggling for quite some time with keeping the bins empty, decides to manage his trash more efficiently. Right now, all of his bins are empty. Over the next K days, on day j ($j = 0, 1, \ldots, K - 1$), he will produce Q_j bags of a single garbage type T_j, which he will put in the right trash bin. Every evening he will decide whether to call the neturbin to empty a range of his bins.

After those K days, Carlo will go to Milan, and he would like to have **all his trash bins emptied** before leaving home.

He doesn't have a lot of money, so help him find out the minimal amount he will have to spend.

Input

The first line contains the integers N ($1 \leq N \leq 2 * 10^5$) and K ($1 \leq K \leq 2 * 10^5$), the number of trash bins and the number of days. The second line contains N integers C_i ($1 \leq C_i \leq 10^9$), the capacity of the trash bins.

Each of the following K lines contains two integers: $T_j (0 \leq T_j \leq N - 1)$, $Q_j (1 \leq Q_j \leq 10^9)$, the type of trash and the number of bags Carlo will produce on day j, respectively.

For tests worth 8 points: $N \leq 3, K \leq 6$

For tests worth 9 more points: $N \leq 5, K \leq 7$

For tests worth 25 more points: Carlo produces each type of trash at least once.

For tests worth 20 more points: Over the K days, Carlo produces at most C_i bags of trash of type i, for each $i = 0 \ldots N - 1$

Output

You need to write a single integer: the minimum price Carlo has to pay to have all his trash bins emptied

after the K days.

Examples

standard input	standard output
2 3 5 7 0 4 1 1 1 7	7
5 7 66 73 68 79 78 2 50 3 69 0 1 2 20 4 12 1 44 3 11	304