G Generator Grid

Time limit: 2s

The volcanic island of Fleeland has never had a proper electric net, but finally the Biomass Alternative Power Conglomerate (BAPC) has agreed to build the island's power plants and network.



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On the island's coast are its n cities. The BAPC has surveyed the cities and proposed m of them as possible locations for a power plant, with the ith proposal stating that the company can build a plant in city c_i for cost a_i.

These power plants are very modern and a single plant could power the whole island, but the volcano makes building power lines across the island a dangerous affair. For $1 \leq i < n$, the company can build power lines between cities i and $i+1$ for a cost of b_i, and between cities n and 1 for a cost of b_n. A city will receive power if it contains a power plant or is connected to a city with a power plant via power lines.

What is the cheapest way to power all the cities on the island?

Input

The input consists of:

- One line containing two integers n ($3 \leq n \leq 10^5$) and m ($1 \leq m \leq n$), the number of cities and the number of possible locations for a power plant.
- Then follow m lines, the ith of which contains c_i ($1 \leq c_i \leq n$) and a_i ($1 \leq a_i \leq 10^9$), the ith possible location for a power plant, and the cost to build it.
- Then follows a line containing n integers b_i ($1 \leq b_i \leq 10^9$), the costs of building the power lines.

The values of $c_1, \ldots, c_m$ are unique and given in strictly increasing order.

Output

Output the minimal cost of powering all cities on the island.

Sample Input 1	Sample Output 1
3 2 1 100 2 200 150 300 150	400

Sample Input 2	**Sample Output 2**
3 2 1 100 2 200 300 300 150	450