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.

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 *i*th 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 $1 \le i < n$, 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 $n \ (3 \le n \le 10^5)$ and $m \ (1 \le m \le n)$, the number of cities and the number of possible locations for a power plant.
- Then follow *m* lines, the *i*th of which contains c_i $(1 \le c_i \le n)$ and a_i $(1 \le a_i \le 10^9)$, the *i*th possible location for a power plant, and the cost to build it.
- Then follows a line containing n integers b_i $(1 \le b_i \le 10^9)$, 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	400
1 100	
2 200	
150 300 150	

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