Problem H. Game Coin

Input file:	standard input
Output file:	standard output
Time limit:	5 seconds
Memory limit:	512 megabytes

Bob recently becomes obsessed with a new game called Glory of Kings.

He has a plan to use game coins to buy hero skins. On the ith day, Bob needs a_i game coins to buy hero skins. There are two ways to get coins:

1. Each game coin can be purchased directly for t yuan.

2. Bob can buy a coin card to get some free temporary coins each day for a valid period. For example, after purchasing a coin card on day i with w free temporary coins each day and a valid period of d days, Bob can get w temporary coins each day from day i to day $i+d-1$. Note that the temporary coin means that if Bob gets the temporary coins on day x, he can only use it on day x, and the temporary coins will expire on day $x+1$.

There are n different types of coin cards in the Glory of Kings. A coin card of ith type with w_i free temporary coins each day and a valid period of d_i days costs c_i yuan.

Each card can be purchased unlimited times on any day. But any new coin card will override the previous one even if it is still valid. For example, if Bob doesn't have any coin card at the begining of day x and he buys one coin card i and one coin card j **in turn** on day x , he will have w_i+w_j temporary coins in day x, and he will only have one coin card j at the end of day x (Card i will be overridden by Card j).

Bob wants to know the minimum money he has to pay to achieve his plan, provided that he takes the best strategy.

Input

The first line of input contains three integers m, n, t ($1 \le m \le 10^5$, $1 \le n \le 400$, and $1 \le t \le 10^9$) — the number of days, the number of coin card types, and the price of a game coin.

Then follow line contains m integers $a_1, a_2, ..., a_m$ ($0 \le a_i \le 5 \times 10^5$ and $\sum_{i=1}^{m} a_i \le 5 \times 10^5$) — the numbers of coins that Bob needs on the m individual days.

The last n lines describe the n types of coin cards. The i-th line contains three integers c_i, w_i, d_i ($1 \le c_i, w_i, d_i \le 10^9$) — the price, the number of free temporary coins each day, and the valid period of coin card of type i.

Output

Print one integer in a line — the minimum money Bob has to pay if he adopts the best strategy.

Examples

standard input	standard output
3 2 9 2 7 4 10 2 3 20 4 3	39
3 2 8 10 23 10 20 10 3 10 2 2	58