A. Chain Stores

Description

Satori's bunny store was a huge success! She soon accumulated enough money to open up chain stores around SUSTech.

Satori opened up N bunny stores recently. For some unknown reasons, Satori must observe the following rules:

- each store opens for only consecutive W days, and
- each store can open again after it has closed for at least H days.

Satori also made up a plan for the following M days. In day i, exactly d_i stores should be open and store i should open exactly w_i days among all M days. Now she is wondering if she can accomplish her plan without breaking the rules.

Input format

The first line contains four integers N, M, W, H.

The following line contains N integers where the i^{th} integer represents w_i which is a multiple of W.

The following line contains M integers where the j^{th} integer represents d_j.

Output format

If Satori can accomplish her plan, output "Yes". Otherwise, output "No" (without quotes).

Samples

Sample Input 1

```
4 9 2 1
4 4 6 2
1 3 2 1 2 1 1 3 2
```

Sample Output 1

```
Yes
```

Sample Input 2

```
4 7 2 2
4 4 4 2
1 3 2 1 3 3 1
```

Sample Output 2

```
No
```

B. Bunnytopia

Description

Satori was obsessed with a game called Bunnytopia recently. Today she invited her friend FluffyBunny to compete.

There are N villages in the world of Bunnytopia, which are connected by M undirected edges.

Initially all the villages are free, and the two players take turns to capture villages. Once one player has captured village i, she can gain a_i points and this village cannot be captured by both players ever again. In addition, if the two villages connected by edge j are captured by the same player, she will receive b_j points.

As FluffyBunny is fairly confident about her skills, she asks Satori to take the first move.

Assume P = Satori's final points minus FluffyBunny's final points. Satori wants to maximum P while FluffyBunny wants to minimize P. You know the two girls are super smart; they always choose the optimal strategy. Can you calculate P for them?

Input format

The first line contains two integers N, M.

The second line contains N integers $a_1, a_2, \ldots, a_N$.

The following M lines each contain three integers x_j, y_j, b_j, meaning that edge j connects village x_j and y_j, and worth b_j points.

Output format

Output one single integer P.

Samples

Sample Input

```
5 4
2 5 4 9 1
1 2 9
2 3 2
1 3 3
3 4 7
```

Sample Output

```
5
```