問題 6 – 吃爆髒壽司 (Dig In)

(15 分)

問題敘述

在鮭魚風暴後，髒壽司店有舉辦了一個吃壽司的活動。這家壽司店推出了一些邪惡優惠組合，把一些同時吃下去會感到不舒服的壽司，放在同個盤子上一起賣。只要你能一起吃下盤子上的所有壽司，就會給你一個折扣。當然，作為一個良心店家，折扣絕對可以當次抵用。當然，作為一個奧客的你，當然可以只單點盤子上的一部分壽司，但是不享有優惠。

今天髒壽司準備了 N 貫壽司和 M個放在盤子上的套餐，這 N 貫壽司會有各自的價錢和重量。第 i 個盤子上會放有 S_i 貫壽司，和一張 X_i円的折價卷，如果一次吃了盤子上的所有壽司，結帳時價格就會減掉X_i円。身為一個重量級吃壽司選手的你，在預算內吃最大重量是你的使命，請問 C円最多可以吃到多少重量的壽司？

注意這邊 N 貫壽司都是獨一無二的，也就是如果你在套餐點了它，就不能再單點同樣壽司，反過來也是一樣。並且，你可以單點任何被放在盤子上的壽司，或是沒有被放在任何盤子上的壽司。

輸入格式

第一行有三個整數 N, M, C分別代表壽司數量以及套餐數量以及預算
第二行有 個整數 $P_1 \ldots P_N$ ，P_i代表第 i 貫壽司的價格
第三行有 N 個整數 $W_1 \ldots W_N$ ，W_i 代表第 i 貫壽司的重量
第四行有 M 個整數 $X_1 \ldots X_M$ ，X_i 代表第 i 個套餐的優惠卷價值
第五行有 M 個整數 $S_1 \ldots S_M$ ，S_i 代表第 i 個套餐的壽司數量
接下來 M 行其中第 i 行有 S_i 個整數 I_{ij}代表第 i 盤子裝有第 I_{ij} 個壽司

輸出格式

輸出一個整數 W 代表預算下使用優惠卷可以吃下的最大重量

資料範圍

- $1 \leq M \leq N \leq 1000$
- $1 \leq P_i, C \leq 100000$
- $1 \leq W_i \leq 1000000$
- $1 \leq X_i \leq 100000$
- $1 \leq S_i \leq N$

保證 l_{ij} 不重複，$1 \leq l_{ij} \leq N$，且優惠券價值不會比盤子上的壽司總價值便宜。
注意： 不保證所有壽司都有被放在盤子上（雖然身為奧客也可以點不在盤子上的壽司）

輸入範例 1

```
5 2 5
2 3 4 1 10
4 1 2 9 2
5 2
3 2
1 2 3
4 5
```

輸出範例 1

```
16
```

範例說明

這個例子一共有兩種套餐，我們可以選擇吃下第一個套餐的三個壽司，和單獨吃第四個壽司。這樣我們總共需要花 $2+3+4+1-5=5$ 円，然會得到 $4+1+2+9=16$ 重量。

輸入範例 2

```
5 2 100
25 12 34 41 40
43 74 90 37 2
9 16
2 2
4 1
3 5
```

輸出範例 2

```
209
```

Q6: Dig In

(15 points)

Description

After the Salmon Sushi Event, Sushi Chang held a sushi eating event. The sushi store launched some evil discounts. They put some sushi which people do not enjoy eating together on a plate. If you manage to eat all of the sushi on the plate at once, you'll receive a discount. Of course, as a picky customer, you can order only part of the set (and pay just the partial price) without ordering the whole set of sushi if you like.

Today, Sushi Chang prepared N sushies and M plates. The N sushies will have its own price and weight. There are S_i sushies and a X_i yen discount ticket on the i th plate. If you eat all the sushi on the plate, you will get a X_i yen discount at checkout. As a super-heavyweight sushi eater, you are born to eat as much sushi by weight as you can. What is the maximum weight of the sushi you can eat if your budget is C yen?

Note that all the N sushies can only be ordered once (whether à la carte or within a set), which means if you order one in a set, you can't order the same one anymore in any other setting. Also you can just order some of the sushi on any plate, even one that isn't included in any set. Please note that discounts will only be given if you order everything in the set.

Input Format

The first line contains three integers N, M, C representing the number of sushies, sets, and budget
The second line contains N integers, $P_1 \ldots P_N$, P_i ,Pi represents the price of the ith sushi.
The third line contains N integers, $W_1 \ldots W_N$, W_i represents the weight of the i th sushi.
The fourth line contains M integers $X_1 \ldots X_M$, $X_i$represents the discount for the ith set.
The fifth line contains M integers$S_1 \ldots S_M$, S_i represents the number of slushies on the ith set.
For the following M lines, the i th line contains S_i numbers $I_{i1} \ldots I_{iS_i}$ represents the indices of slushies on the i th plate.

Output Format

Output an integer, which is the weight you can eat within the budget.

Data Range

- $1 \leq M \leq N \leq 1000$
- $1 \leq P_i, C \leq 100000$
- $1 \leq W_i \leq 1000000$
- $1 \leq X_i \leq 100000$
- $1 \leq S_i \leq N$

It is guaranteed that all I_{ij} is unique and $1 \leq I_{ij} \leq N$. Also, the discount will not be greater than the total price on the plate.

Note that, it's not guaranteed that every sushi appears in a set. (Though you can still eat them if they're not in any set)

Input Example 1

```
5 2 5
2 3 4 1 10
4 1 2 9 2
5 2
3 2
1 2 3
4 5
```

Output Example 1

```
16
```

Example Explanation:

For this example, there are two sets. We can choose the first set and the fourth sushi. It costs $2 + 3 + 4 + 1 - 5 = 5$ yen, and you will receive $4 + 1 + 2 + 9 = 16$ weight.

Input Example 2

```
5 2 100
25 12 34 41 40
43 74 90 37 2
9 16
2 2
4 1
3 5
```

Output Example 2

```
209
```