Problem 2
Goods In a Shop
Time Limit: *1 Second*

You are an owner of a shop. There are n types of good in your shop. For *i-th* type of good, there are a_i many of them in the shop. Also for *i-th* type of good, the shop can store at most b_i of them.

For each day, exactly 5 people will come to your shop. They either want to buy a certain type of good from you or sell certain type of good to you.

If the customer wants to buy some goods of a certain type from you, but you do not have that many goods in your shop, the customer will just leave without buying anything. And if you have that many goods you will just sell them to the customer.

If the customer wants to sell some goods of a certain type to you, you will buy as much as you can. If buying all of them does not exceed the maximal storage of this type of good, you will buy all of them. Otherwise you buy till the storage of this type of good reach the maximum.

After serving all 5 customers for a day, you will close your shop and check the storage of each type of good.

Input

The first line consists of 2 space separated integers $n(1 \leq n \leq 100)$ $d(1 \leq d \leq 100)$, denoting the number of types of good and total number of days.

The second line consists of n space separated integer $b_1\ b_2\ \ldots\ b_n$, $1 \leq b_i \leq 100$, denoting maximal storage of each type of good.

The third line consists of n space separated integer $a_1\ a_2\ \ldots\ a_n$, $0 \leq a_i \leq b_i$, denoting current storage of each type of good.

The following $5d$ lines will be one of the following :

1 $x(1 \leq x \leq n)$ $y(1 \leq y \leq 100)$: The person wants to sell y many *x-th* type of goods to you.

2 $x(1 \leq x \leq n)$ $y(1 \leq y \leq 100)$: The person wants to buy y many *x-th* type of goods from you.

Output

Print d lines of space separated integers. The *i-th* line is the storage of each type of the good after *i-th* day.

Each line consist of n space separated integers. The *j-th* integer for *i-th* line is the storage of *j-th* type of good after *i-th* day.

Sample Input

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3 1
2 2 3
0 0 1
2 3 2
1 1 3
2 1 1
1 2 3
2 3 1
```

Sample Output

```
1 2 0
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Explanation of Sample Data

At the beginning you have 0 good of type 1, 0 good of type 2 and 1 good of type 3.

The first customer wants to buy 2 goods of type 3 from you, but you do not have that many. So the customer just leaves.

The next customer wants to sell 3 goods of type 1 to you, but the maximal storage for type 1 is 2. So you will buy 2 goods of type 1.

The next customer wants to buy 1 good of type 1 from you and you have 2 of them. You sell one to the customer.

The next customer wants to sell 3 goods of type 2 to you and the maximal storage for type 2 is 2. So you buy 2 goods of type 2.

The last customer wants to buy 1 good of type 3 and you have exactly 1 storage of this type. You sell it to the customer.

At the end of the day, you have 1 good of type 1, 2 goods of type 2 and 0 good of type 3.