**Move the matrix**

SEASON 10 - THIRD ROUND

You are given two matrices **A** and **B**, both with **M** rows and **N** columns. The Hadamard product of the two matrices is a third matrix **C** with the same size, in which every element is equal to the product of the corresponding elements in A and B. We are interested in the sum **S** of all elements in the Hadamard product of A and B.

You are allowed to perform the following two operations **only** on matrix A:

* A cyclic shift on row *i* with *k* steps (0 < k < N). If before the operation the row was , after it the row becomes . The price of one such operation is **Ri**.
* A cyclic shift on column *j* with *k* steps (0 < k < M). If before the operation the column was , after it the column becomes . The price of one such operation is **Cj**.

Your task is to minimize the sum of *S* and prices of all operations you perform. You are allowed to perform at most **P** operations.

**Input (movethematrix.in):**

On the first line of the input you are given three integers M, N and P. On the second line there are M integers Ri. On the third line there are N integers Cj. Each of the following M lines contains N non-negative integers, describing matrix A. Each of the last M lines also contains N non-negative integers, describing matrix B.

**Output (movethematrix.out):**

On the first line you should print an integer **Q** - the number of operations you want to perform. For each operation print on a separate line ‘R’ or ‘C’ depending on the type of the operation, the index of the row or the column, on which you want to perform it, and the number of steps k.

**Constraints:**

**Example:**

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3 4 2  10 3 7  2 1 4 4  1 2 3 4  7 12 8 5  0 100 9 6  2 5 3 4  1 1 1 0  9 8 7 6 | 2  C 2 1  R 2 2 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 12 | 3 | 4 |
| 7 | 100 | 8 | 5 |
| 0 | 2 | 9 | 6 |

**Explanation:**

Matrix A changes in the following way:

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |
| 7 | 12 | 8 | 5 |
| 0 | 100 | 9 | 6 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 12 | 3 | 4 |
| 8 | 5 | 7 | 100 |
| 0 | 2 | 9 | 6 |

And this is the Hadamard product of A and B:

|  |  |  |  |
| --- | --- | --- | --- |
| 2 | 60 | 9 | 16 |
| 8 | 5 | 7 | 0 |
| 0 | 16 | 63 | 36 |

The sum of the elements in the Hadamard product is 222 and the sum of prices of performed operations 4. So the total score is 226.

**Scoring:**

For each test, let *minScore* be the least score among all participant scores and *yourScore* be your score. You will get of the points for that test.

**Subtasks:**

10% - N, M <= 10

20% - Aij <= 1

30% - Ri, Cj = 0

40% - no additional constraints