

Problem I. TRIPLE

Time Limit: 3 seconds

Problem Description

Given the finite **multi-set** A of n pairs of integers, an another finite **multi-set** B of m triples of integers, we define the product of A and B as a **multi-set**

$$\begin{aligned} C &= A * B \\ &= \{ \langle a, c, d \rangle \mid \langle a, b \rangle \in A, \langle c, d, e \rangle \in B \text{ and } b = e \} \end{aligned}$$

For each $\langle a, b, c \rangle \in C$, its BETTER set is defined as

$$\begin{aligned} BETTER_C(\langle a, b, c \rangle) &= \\ &= \{ \langle u, v, w \rangle \in C \mid \langle u, v, w \rangle \neq \langle a, b, c \rangle, u \geq a, v \geq b, w \geq c \} \end{aligned}$$

As a **multi-set** of triples, we define the TOP subset (as a multi-set as well) of C , denoted by $TOP(C)$, as

$$TOP(C) = \{ \langle a, b, c \rangle \in C \mid BETTER_C(\langle a, b, c \rangle) = \emptyset \}$$

You need to compute the size of $TOP(C)$.

Input

The input contains several test cases. The first line of the input is a single integer t ($1 \leq t \leq 10$) which is the number of test case. Then t test cases follow.

Each test case contains three lines. The first line contains two integers n ($1 \leq n \leq 10^5$) and m ($1 \leq m \leq 10^5$) corresponding to the size of A and B respectively. The second line contains $2 \times n$ nonnegative integers

$$a_1, b_1, a_2, b_2, \dots, a_n, b_n$$

which describe the multi-set A , where $1 \leq a_i, b_i \leq 10^5$. The third line contains $3 \times m$ nonnegative integers

$$c_1, d_1, e_1, c_2, d_2, e_3, \dots, c_m, d_m, e_m$$

corresponding to the m triples of integers in B , where $1 \leq c_i, d_i \leq 10^3$ and $1 \leq e_i \leq 10^5$.

Output

For each test case, you should output the size of set $TOP(C)$.

Sample Input

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

Sample Output

```
Case #1: 5
Case #2: 12
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