

## 7246 Triple

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
```