

Deciding the price of a product is not an easy matter. If the price is high, then consumers get angry because they think it is too expensive. But if the price is low, then producers get angry because they do not earn enough money.

In this problem, you have to bid for the price that produces the minimum number of angry people.

For a given product, we have a set of producers and a set of consumers. Each producer has suggested his/her ideal price for the product. If your bid is below that ideal price, then the producer will get angry. Also, each consumer has suggested his/her ideal price for the product. If your bid is above that ideal price, then the consumer will get angry.

You have to find the price that produces the minimum number of angry people (either producers or consumers). Your bid price should always be between 0 and 10^9 . And if there is more than one optimal solution, you have to output the lowest one.

Input

The input consists of a series of test cases. The first line contains a number that indicates the number of test cases.

Each test case consists of three lines. The first one contains two integers, P and C , indicating the number of producers and consumers of the product, respectively. These numbers will be between 0 and 10^4 . Then, the second line contains P integer numbers, the ideal prices for the producers. And the third line contains C integer numbers, the ideal prices for the consumers. The prices are between 1 and 10^8 .

Output

For each input case, you have to output two numbers separated by one space: the bid price that produces the minimum number of angry people; and the total number of angry people for that price. Remember that if there is more than one optimal solution, you have to output the one with lowest price; and the result cannot be a negative number.

Sample Input

```
4
3 3
10 16 12
21 20 25
4 3
104 120 98 132
120 88 140
8 8
36 27 52 72 36 37 26 38
35 75 36 39 44 82 23 62
0 2

28 71
```

Sample Output

```
16 0
120 2
38 5
0 0
```