

# The Professor's Challenge

Professor Sergio Marquina is in a dilemma about choosing the Leader of the Heist Team, since both Tokyo and Berlin are equally fit for the Leadership Role. In order to choose the right one between them, the Professor challenges both of them to solve a Problem.

In this Problem, He gives them  $N$  Integer Cartesian Coordinates. They are supposed to find the Argmin of function  $F$  over all  $N$  coordinates, where he defined  $F$  as

$$F(x, y) = \sum_{i=1}^N (x - x_i)^2 + (y - y_i)^2.$$

Since Tokyo is weak in Coordinate geometry, she is seeking for your help. Help Tokyo solve the Challenge.

Formally, given  $N$  Coordinates, find the argmin of  $F$  over all  $N$  coordinates.

## Input Format

The first line of input contains a single Integer  $T$ , denoting the Number of Test Cases. The description of  $T$  test cases follows.

- The first line of each test case contains a single integer  $N$ , denoting the number of points.
- $N$  lines follow. For each  $i$ ,  $1 \leq i \leq N$ , the  $i^{th}$  of these lines contains two space-separated integers  $x_i$  and  $y_i$ .

## Constraints

- $1 \leq T \leq 10$
- $1 \leq N \leq 10^5$
- $-10^6 \leq x_i, y_i \leq 10^6$

## Output Format

For each test case, print a single line containing two Integers, denoting the Coordinates of argmin of  $F$  over all  $N$  coordinates. If multiple argmins exist, print the Coordinates of the point with least index.

## Sample Input 0

```
3
4
1 0
2 2
3 2
4 0
3
0 0
3 0
3 4
2
```

```
-1 -1  
1 1
```

### Sample Output 0

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

### Explanation 0

There are 3 test cases.

For test case 1:  $N = 4$ .  $x_i = [1, 2, 3, 4]$ ,  $y_i = [0, 2, 2, 0]$ .

$F(1, 0) = 22$ ,  $F(2, 2) = 14$ ,  $F(3, 2) = 14$  and  $F(4, 0) = 22$ . Hence, Argmin is (2,2).