Max. score 30.00

The Kth maximum

You are given a $2D$ matrix A of size $N \times M$. The $XOR(i, j)$ value is defined for a pair (i, j) as the bitwise XOR of all the cells A_{xy} from A_{11} to A_{ij} where $(1 \leq x \leq i)$ and $(1 \leq y \leq j)$. Find the pair $(i,\ j)$ with the k^{th} maximum $XOR(i, j)$ value among all possible pairs. If multiple such pairs (i, j) exist, then print the smallest one.

Note

- If more than one (i, j) pair has the same $XOR(i, j)$ value, then one having the smallest i or if the same i is there then the smallest j is considered to be the smallest.
- 1 based indexing is considered.

Input format

- The first line has an integer T denoting the number of test cases. For each test case:
- The first line of each test case contains two space-separated integer denoting N and M.
- Next N lines of each test case have M space-separated integer denoting the elements of A.
- The last line of each test case has an integer K.

Output format

Print (i, j) denoting the required answer for each test case in a new line.

Constraints

$1 \leq T \leq 10$
$1 \leq N \times M \leq 10^5$
$0 \leq A_{i,j} \leq 2^{31}$
$1 \leq K \leq N \times M$

Sample input 1

Copy

```
1
2 2
1 2
2 3
```

Sample output 1

Copy

```
1 2
```

Problems - GOCC14: Google

hackerearth.com/challenges/test/GOCC14_coding_in_newgrad/problems/f920b02adb02452880ab6e3001be

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323586122892@goog...

Total score: 60.0

+ 30.0

+ 30.0

Sample input 1

Copy

```
1
6 5 2
1 2 3 4 5 6
```

Sample output 1

```
4
```

Explanation

For the above test case, we choose subarrays of size 2 as follows :-

1. Subarray from index 1 to 2. New array is [2 3 3 4 5 6].
2. Subarray from index 1 to 2. New array is [3 4 3 4 5 6].
3. Subarray from index 1 to 2. New array is [4 5 3 4 5 6].
4. Subarray from index 1 to 2. New array is [5 6 3 4 5 6].
5. Subarray from index 3 to 4. New array is [5 6 4 5 5 6].

The minimum of all array elements is 4. There is no way we can get a minimum value greater than 4.

Note: There can be more than one way, to apply at most 5 operations such that minimum value of 4 among all array elements can be achieved.

ⓘ The following test cases are the actual test cases of this question that may be used to evaluate your submission.

Problems - GOCC14: Google

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Total score: 60.0

ns

ps + 30.0

+ 30.0

Sample input 3

Copy

```
1
5 10 1
12 24 35 86 39
```

Sample output 3

```
22
```

Sample input 4

Copy

```
2
5 3 1
59 51 48 27 82
8 10 3
66 30 100 71 82 13 66 65
```

Sample output 4

```
30
23
```

Sample input 5

Copy

```
2
7 9 1
73 77 60 100 94 24 31
10 6 5
```

Sample output 5

```
32
30
```