Liao's Search Algorithm

Problem Statement

Liao is a power person, he is good at anything especially Search Algorithm, his motto is "There is nothing that cannot be solved by Search once, if there is, then Search twice!" So, for any NP-hard problem, Liao can always get the best answer by Liao's Search Algorithm. How powerful he is! Just depend on that, Liao has solved a problem with theory time complexity is 6^{100} ! , Everyone is confused with Liao's talent, because they can't believe that! People believe that Liao can solve NP-hard problem just Depend on a secret item called 772002!

Now people want to check whether Liao is really a talent person, they request Liao to solve an easy problem, but during the solving time, Liao must take 772002 to another person.

But Liao has his own pride, he doesn't want to solve this easy problem and you are a fan of Liao, you want help Liao to solve this problem!

The problem is a hard search algorithm problem. You are given a positive integer sequence $a_1, a_2, \ldots, a_N$ of length N , and there two kinds of operations.

Operation 1 : change $a_l, a_{l+1}, \ldots a_r$ to y

Operation 2 : query the k-th small element between $a_l, a_{l+1}, \ldots a_r$

Input Format

The first line only contains an positive integer T (T <= 5) , represents there are T test cases.

For each test case:

The first line contains two positive integers N and Q. $1 \le N \le 10^5$, $1 \le Q \le 10^5$

The next line contains N positive integer , represent $a_1, a_2, \ldots, a_N$. $(1 \le a_i \le 10^9)$

The next Q lines, first contains an integer x, indicating the kind of operation.

If x is 1 , then three positive integers l, r, y . it means you need to change $a_l, a_{l+1}, \ldots a_r$ to y . $1 \le l \le r \le N$, $1 \le y \le 10^9$.

If x is 2 , then three positive integers l, r, k . it means you need to output the k-th small element between $a_l, a_{l+1}, \ldots a_r$. $1 \le l \le r \le N$, $1 \le k \le \min(r - l + 1, 15)$

Output Format

For each operation 2, output one integer represent the answer.

Sample Input

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

Sample Output

```
1
2
5
```

Explanation

For the Sample input

The first operation is query the 1-th small integer between [1，1] , so you should output 1

The second operation is query the 2-th small integer between [1,，2], so you should output 2

After the third operation, the sequence are: 5 2 3 4 5

Then for operation 4 , the 2-th small element between [5， 2] is 5 , then you output 5