Xor Queries

Problem code: XRQRS

Read problems statements in Mandarin Chinese and Russian.

Given an initially empty integer array (1-indexed) and some queries:

- **Type 0**: Add the integer number **x** at the end of the array.
- **Type 1**: On the interval **L..R** find a number **y**, to maximize (**x xor y**).
- **Type 2**: Delete last **k** numbers in the array
- **Type 3**: On the interval **L..R**, count the number of integers less than or equal to **x**.
- **Type 4**: On the interval **L..R**, find the k_{th} smallest integer (k_{th} order statistic).

Input

- The first line contains a single integer **M** denoting number of queries.
- The following **M** lines contain queries, form of queries is as follows.
- Query type 0 has the form **"0 x"**.
- Query type 1 has the form **"1 L R x"**.
- Query type 2 has the form **"2 k"**.
- Query type 3 has the form **"3 L R x"**.
- Query type 4 has the form **"4 L R k"**.

Note that, there will be no invalid query in the input.

Output

For each Query of type 1, 3 and 4 output the result in a single line.

Constraints

- Let **N** denote numbers of elements in before executing the query.
- **$1 \le M \le 5 * 10^5$**
- **$1 \le x \le 5 * 10^5$**
- **$1 \le L \le R \le N$**
- For query type 2, **$1 \le k \le N$** and for query type 4, **$k \le R-L+1$**

Subtasks

- Subtask #1 (40 points): **$1 \le M \le 5 * 10^4$**
- Subtask #2: (60 points): **$1 \le M \le 5 * 10^5$**

Example

Input:

```
10
0 8
4 1 1 1
0 2
1 2 2 7
1 2 2 7
0 1
3 2 2 2
1 1 2 3
3 1 3 5
0 6
```

Output:

```
8
2
2
1
8
2
```

Author:	gomelfk
Tester:	shiplu
Date Added:	6-12-2014
Time Limit:	1.5 sec
Source Limit:	50000 Bytes
Languages:	ADA, ASM, BASH, BF, C, C99 strict, CAML, CLOJ, CLPS, CPP 4.3.2, CPP 4.8.1, CPP11, CS2, D, ERL, FORT, FS, GO, HASK, ICK, ICON, JAVA, JS, LISP clisp, LISP sbcl, LUA, NEM, NICE, NODEJS, PAS fpc, PAS gpc, PERL, PERL6, PHP, PIKE, PRLG, PYTH, PYTH 3.1.2, RUBY, SCALA, SCM guile, SCM qobi, ST, TCL, TEXT, WSPC

SUBMIT

Comments

anupam_codecs *@ 2 Jan 2015 06:17 PM*

What is the range of N ?

Need help? Post a comment. But before that please spare a moment to read the guidelines.

Your name:
henviso

Comment: *

Save

CodeChef - A Platform for Aspiring Programmers

CodeChef was created as a platform to help programmers make it big in the world of algorithms, **computer programming** and **programming contests**. At CodeChef we work hard to revive the geek in you by hosting a **programming contest** at the start of the month and another smaller programming challenge in the middle of the month. We also aim to have training sessions and discussions related to **algorithms, binary search**, technicalities like **array size** and the likes. Apart from providing a platform for **programming competitions**, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of **computer programming**.

Practice Section - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in a language of your choice. Our **programming contest** judge accepts solutions in over 35+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple **programming challenges** that take place through-out the month on CodeChef.

Compete - Monthly Programming Contests and Cook-offs

Here is where you can show off your **computer programming** skills. Take part in our 10 day long monthly **coding contest** and the shorter format Cook-off **coding contest**. Put yourself up for recognition and win great prizes. Our **programming contests** have prizes worth up to Rs.20,000 and $700lots more CodeChef goodies up for grabs.

Discuss

Are you new to **computer programming**? Do you need help with algorithms? Then be a part of CodeChef's Forums and interact with all our programmers - they love helping out other programmers and sharing their ideas. Have discussions around **binary search, array size, branch-and-bound, Dijkstra's algorithm, Encryption algorithm** and more by visiting the CodeChef Forums and Wiki section.

CodeChef Community

As part of our Educational initiative, we give institutes the opportunity to associate with CodeChef in the form of Campus Chapters. Hosting **online programming competitions** is not the only feature on CodeChef. You can also host a **coding contest** for your institute on CodeChef, organize an **algorithm** event and be a guest author on our blog.

Go For Gold

The Go for Gold Initiative was launched about a year after CodeChef was incepted, to help prepare Indian students for the **ACM ICPC** World Finals competition. In the run up to the **ACM ICPC** competition, the Go for Gold initiative uses CodeChef as a platform to train students for the **ACM ICPC** competition via multiple warm up contests. As an added incentive the Go for Gold initiative is also offering over Rs.8 lacs to the Indian team that beats the 29th position at the **ACM ICPC** world finals. Find out more about the Go for Gold and the **ACM ICPC** competition here.