Monk And Some Queries

Attempted by: **1391** / Accuracy: **86%** / Maximum Score: **30** / ★★★★☆ 66 Votes

Tag(s): Easy-Medium, Heap, Priority Queue

Monk was asked to answer some queries in an interview. He is given an empty array **A**. Queries are of 4 types:-
1. **1 X** - Add number **X** to the array **A**.
2. **2 X** - Remove a single instance of number **X** from the array **A**. If not possible, print "**-1**" without the quotes.
3. **3** - Find the maximum element in the array **A**.
4. **4** - Find the minimum element in the array **A**.

Input:
The first line contains the integer **Q**.
The next **Q** lines will each contain a query like the ones mentioned above.

Output:
For queries **3** and **4**, print the answer in a new line. If the array is empty for query **3** and **4**, then print "**-1**" without the quotes.

Constraints:
1 <= **Q** <= 100000
1 <= **X** <= 100000

SAMPLE INPUT

```
5
1 5
1 9
1 6
3
2 1
```

SAMPLE OUTPUT

```
9
-1
```

Explanation

There are 5 queries.
Query 1 - 5 is added to the array.
Query 2 - 9 is added to the array.
Query 3 - 6 is added to the array.
Query 4 - The maximum element in the array is 9.
Query 5 - Since there is no element in the array with value 1, so the output is -1.

Time Limit:	1,0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Marks are awarded when all the testcases pass.
Allowed Languages:	C, C++, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, JavaScript(Rhino), JavaScript(Node.js), Lisp, Lisp