ADAlab Online Judge

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ⓘ About ⌄

- `I x` : Insert. If x is not in the set, insert x to the set. If x is in the set, don't do anything.

- `R x` : Remove. If x is in the set, remove x from the integer set. If x is not in the set, don't do anything.

- `S x` : Search. Report if x is in the set or not.

- `L x` : Lower bound. Report the smallest element that is greater than or equal to x in the set.

- `U x` : Upper bound. Report the smallest element that is greater than x in the set.

Note: numbers x in this problem are generated distribution randomly.

Input

The first line is an integer n — the number of operations. Following n lines, each line contains one operation described above.

Restrictions

- $1 \le n \le 10^5$
- $1 \le x \le 10^9$ for every x in all operations

Output

For each operation:

- `I x` or `R x` : Output the size of the set after finish the operation.

- `S x` : If x is in the set, output "YES". Otherwise, output "NO".

- `L x` or `U x` : If the required element is in the set, output the element. Otherwise, output "-1".

Sample Input 1 📋

```
19
I 4
I 8
I 7
I 6
I 3
R 7
R 5
R 4
S 8
I 8
S 7
L 9
L 8
L 7
```

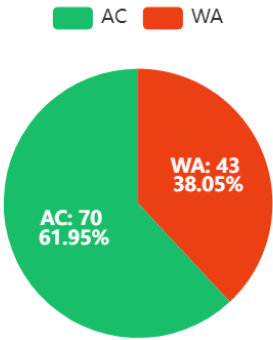## Sample Output 1

```
1
2
3
4
5
4
4
3
YES
3
NO
-1
8
8
6
```

Submissions

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ⓘ Information

ID	1
Time Limit	1000MS
Memory Limit	256MB
IO Mode	Standard IO
Created By	ta_david
Level	Hidden
Score	100
Tags	Show

☻ Statistic   Details

🟩 AC   🟥 WA

WA: 43
38.05%

AC: 70
61.95%

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Hint

Detailed Restrictions

For test ID $1, 2$:

- only `Insert` and `Search` operations

For test ID $3, 4$:

- no `Remove` operations

For test ID $5, 6, 7, 8, 9, 10$:

- no restriction

Language: `C++` ▾   ⟳

Theme: `Solarized Light` ▾

☁️

```
1
```

✅ You have solved the problem

🐛 Submit for Sample Test   ✏️ Submit

⚠️ Contest has ended

Sample Test Input

Sample Test Output

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```
I 6
I 3
R 7
R 5
R 4
S 8
I 8
S 7
L 9
L 8
L 7
L 6
U 9
U 8
U 7
U 6
```

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