set.

The integer set supports the following operations:

- `I x` : Insert. Insert x to the set. Note that you still have to insert the integer even if there exists at least one x in the set.
- `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.
- `C x` : Count. Report the occurrence of x in the integer set.
- `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

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

Output

For each operation:

- `I x` or `R x` : Output the number of distinct integers in the set after finish the operation.
- `C x` : Output the occurrence of x in the set.
- `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
```

Sample Output 1

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

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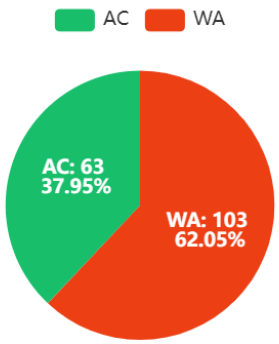
Information

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

Statistic Details



```
L 6
U 9
U 8
U 7
U 6
```

```
-1
-1
8
8
```

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

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