COCI '08 Contest 2 #5 Setnja

Time limit: 0.6s   **Memory limit:** 32M

In an infinite binary tree:

- Each node has exactly two children – a left and a right child.
- If a node is labeled with the integer X, then its left child is labeled $2 \cdot X$ and its right child $2 \cdot X + 1$.
- The root of the tree is labeled 1.

A walk on the binary tree starts in the root. Each step in the walk is either a jump onto the left child, onto the right child, or pause for rest (stay in the same node).

A walk is described with a string of letters `L`, `R` and `P`:

- `L` represents a jump to the left child;
- `R` represents a jump to the right child;
- `P` represents a pause.

The value of the walk is the label of the node we end up on. For example, the value of the walk `LR` is 5, while the value of the walk `RPP` is 3.

A set of walks is described by a string of characters `L`, `R`, `P` and `*`. Each `*` can be any of the three moves; the set of walks contains all walks matching the pattern.

For example, the set `L*R` contains the walks `LLR`, `LRR` and `LPR`. The set `**` contains the walks `LL`, `LR`, `LP`, `RL`, `RR`, `RP`, `PL`, `PR` and `PP`.

Finally, the value of a set of walks is the sum of values of all walks in the set.

Calculate the value of the given set of walks.

Input Specification

A string describing the set. Only characters `L`, `R`, `P` and `*` will appear and there will be at most $10\,000$ of them.

Output Specification

Output the value of the set.

Scoring

In test data worth 30% points, there will be no characters `*`. In test data worth 50% points, there will be at most three characters `*`.

Sample Input 1

```
P*P
```

Sample Output 1

```
6
```

Sample Input 2

```
L*R
```

Sample Output 2

```
25
```

Sample Input 3

```
**
```

Sample Output 3

```
33
```

Sample Input 4

```
LLLLLRRRRRLLLLLRRRRRLLLLLRRRRRLLLLL
```

Sample Output 4

```
35400942560
```