COCI '07 Contest 1 #4 Zapis

A regular bracket-sequence is a string of characters consisting only of opening and closing brackets, and satisfying the following conditions:

- An empty string is a regular bracket-sequence.
- If A is a regular bracket-sequence, then (A), $[A]$ and $\{A\}$ are also regular bracket-sequences.
- If A and B are regular bracket-sequences, then AB is also a regular bracket-sequence. For example, the sequences $[(\{\})]$, $[]()\{\}$ and $[\{\}]()[\{\}]$ are regular, but the sequences $[(\{\{([$, $[](\{)\}$ and $[\{\}])([\{\}]$ are not.

Ivica has found a string which looks like it could be a regular bracket-sequence. Some of the characters have become smudged and illegible, and could have been any character.

Write a program that calculates how many ways the illegible characters in the string can be replaced by brackets so that the result is a regular bracket-sequence. This number can be very large, so output only its last 5 digits.

Input Specification

The first line contains an even integer N $(2 \leq N \leq 200)$, the length of the string.

The second line contains the string. Illegible characters are represented by the `?` character.

Output Specification

Output the number of regular bracket-sequences the string could have read.

Sample Input 1

```
6
()()()
```

Sample Output 1

```
1
```

Sample Input 2

```
10
(?([?)]?}?
```

Sample Output 2

```
3
```

Explanation for Sample Output 2

In the second example, the three matching regular bracket-sequences are $(\{([()])\})$, $()([()]\{})$ and $([([])]\{})$.

Sample Input 3

```
16
???[???????]????
```

Sample Output 3

```
92202
```