



Review of Combo

Problem

There is a secret string S which consists of four characters 'A', 'B', 'X', or 'Y'. The first character of S never reappears in S . You know only N , the length of S .

You can ask a query as follows:

- You specify a string of the above four characters whose length is not larger than $4N$.
- You get the maximum length of the prefixes of S which are also substrings of the specified string.

Your task is to determine S .

Subtasks and Solutions

Let Q be the number of asks.

$N=3$

- Ask by all possible strings until N is returned.

$Q=4N$

- Determine the characters of S from the beginning one by one.
- For each position, try by all four characters one by one.

$Q=2N+1$ or $2N$

- Determine the characters of S from the beginning one by one.
- For the first position, determine the character by three asks. For each position except the first one, considering the constraint of S , determine the character by two asks.
- Or for each position, using conditional branches, determine the character by two asks.

$Q=N+2$

- Determine the characters of S from the beginning one by one.
- Except the first or last position, determine the character by one ask as follows.
 - Assume that the first character of S is, for example, 'A'.
 - Let s be the prefix of S already known.
 - Ask by $s + 'B' + s + 'XB' + s + 'XX' + s + 'XY'$.
 - If the next character is 'B', then $|s| + 1$ is returned. If it is 'X', then $|s| + 2$ is returned. If it is 'Y', then $|s|$ is returned.
- Note that if $Q \leq N + 10$, you can get nearly full points according as Q .