# Problem L: Longbottom Leap
Time limit: 1 second

During his seventh year in Hogwarts, Neville Longbottom reactivated Dumbledore's Army with Ginny and Luna, and replaced Harry as their leader in order to fight against Voldemort's takeover. As he did so often lately, this night Neville sneaked into the restricted section of the library to find new ways to inconvenience Snape and his fellow Death Eaters and Slytherins.
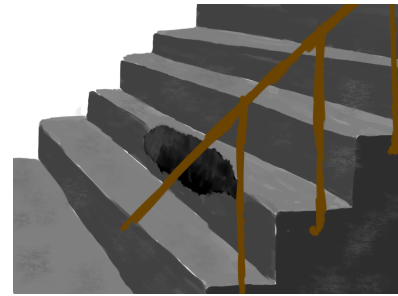
Among the books he discovered during his previous visit, one in particular caught his attention. It contains a spell which supposedly fixes the vanishing steps in certain staircases that had plagued Neville during his entire time in Hogwarts and are now used as an opportunity to ridicule and belittle the poor first-years more than ever. Willing to try this spell and put an end to this, he decided to take the book this time.

Luckily, the spell allows fixing all the vanishing steps in an arbitrarily long sequence of consecutive steps at once. However, the spell gets longer and longer the more consecutive steps are considered. For the spell's shortest possible form, this sequence can contain up to 32 consecutive steps. In order to increase this number, the word `long` can be appended an arbitrary number of times to the front of the spell, doubling the maximum number of consecutive steps every time. For instance, `long long` and `long long long` can be applied to sequences of consecutive steps of length 64 and 128, respectively.

Unfortunately, the new regime under Snape greatly strengthened the safety measures, so Neville should return the book as soon as possible so that they won't notice that someone sneaks into the restricted section and close the last remaining loopholes in their security system. Because the spell requires the casting wizard to stand close to the first step of the considered sequence, it would take too long to apply it multiple times. Furthermore, he of course wants to keep the spell itself as short as possible.

Neville already knows the sequence of consecutive steps he wants to fix using the spell and also knows which of these steps need fixing, but is not sure what the shortest sufficient form of the spell is. Can you help him?

Input

The input consists of:
- One line containing a single string s describing the sequence of steps Neville wants to apply the spell to. Each character in s is either `0` or `1`, where a `1` indicates that the respective step is a vanishing step. s contains at most 10^6 characters and no leading or trailing zeroes.

Output

Output the shortest sufficient form of the spell.

Sample Input 1	Sample Output 1
1	long

Sample Input 2

	Sample Output 2
`1000111010101111010001101010111`	`long`

Sample Input 3

	Sample Output 3
`100000000000000000000000000000001`	`long long`