

# Competitive Programming SS24

Submit until end of contest



## Problem: Crushing (1 second timelimit)

You are out of money! Even though you followed the instructions in the email word by word and checked three times, that you sent the money to the correct swiss bank account, you never received the gold you were promised by the friendly prince. Something bad must have happened to him!



To meet your goal of being filthy rich by the end of the year, you need to change strategy. While watching your favorite TV show Galileo, you learned, that you can easily create diamonds, by just applying a little pressure on some coal. Since you do not believe in the future of coal, you came up with an even better idea: Crushing bitstrings into bitcoins!

You start experimenting by putting different bitstrings under pressure and observe the following:

- Whenever there are two consecutive instances of the same substring, they can collapse into a single instance of that substring.
- When there are multiple possibilities for such collapses, you can't predict which one will happen next. For example 001010 could collapse into 01010 (00 → 0) or 0010 (0101 → 01, or 1010 → 10). Both results can collapse further.

In order to create these precious bitcoins, you apply pressure on your bitstrings until they can't collapse any further. You wonder what a shortest possible result of this process might look like.

**Input** The input consists of:

- One line containing a string  $s$  ( $1 \leq |s| \leq 10^6$ ), consisting only of zeros and ones.

**Output** Output a shortest possible result you can get by applying pressure on  $s$  until you can't collapse it further. If there are several possible results of the smallest length, you may output any of them.

### Sample Input 1

1111

### Sample Output 1

1

**Sample Input 2**

101

**Sample Output 2**

101

**Sample Input 3**

10110

**Sample Output 3**

10