

2736 - Coco-Bits and their Relatives

Description

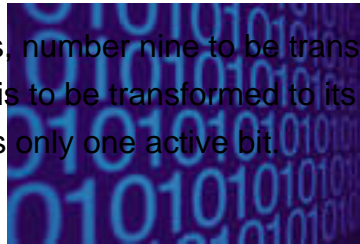
The Coco-Bits are bored so they have decided to play an interesting game. The game is as follows: given a string of up to one million bits, they must make Coco-Transformations to it until they obtain a string with only one active bit. A Coco-Transformation involves counting the number of active bits in the string and writing that number in binary, so a new string of bits is obtained.

Example:

10010100000111111 -> 9 active bits, number nine to be transformed to binary (1001).

1001 - > 2 active bits, the number 2 is to be transformed to its binary form (10).

10 -> We're done, the chain contains only one active bit.



It took only two Coco-transformations to complete the process. The problem is this: the Coco-Bits want to know the derivation process of the Coco-transformations, so you are asked to make a program that, given a string of bits, shows the strings generated by Coco-transformations up to the string with a single active bit.

Input specification

A string of bits, up to one million bits.

Output specification

Show each of the strings generated by Coco-Transformations.

Sample input

```
10010100000111111
```

Sample output

```
10010100000111111
```

```
1001
```

```
10
```