

# Champernowne Verification

Problem ID: champernowneverification  
Time limit: 1 second

The  $k^{\text{th}}$  Champernowne word is obtained by writing down the first  $k$  positive integers and concatenating them together. For example, the 10<sup>th</sup> Champernowne word is 12345678910.

Given a positive integer  $n$ , determine if it is a Champernowne word, and if so, which word.

## Input

The first line contains a single integer,  $n$  ( $1 \leq n \leq 10^9$ ).  $n$  will not have leading zeroes.

## Output

If  $n$  is the  $k^{\text{th}}$  Champernowne word, output  $k$ . Otherwise, output  $-1$ .

| Sample Input 1 | Sample Output 1 |
|----------------|-----------------|
| 123456789      | 9               |
| Sample Input 2 | Sample Output 2 |
| 1000000000     | -1              |
| Sample Input 3 | Sample Output 3 |
| 11             | -1              |
| Sample Input 4 | Sample Output 4 |
| 1324           | -1              |