

## Problem C: 1, 10, 100, 1000, ...

Consider an infinite sequence of digits constructed of ascending powers of 10 written one after another. Here is the beginning of the sequence: 110100100010000.... You have to determine what digit is located at any given position of the sequence starting from left. For example, the digit at positions 1, 2 and 3 are 1, 1 and 0, respectively.

### Input

The input consists several test cases. Each test case consists of a single integer  $n$ , where  $0 < n < 2^{31}$ , that represents a position in the sequence. For each input,  $n$ , your program should determine the digit at the  $n^{\text{th}}$  position in the sequence of digits constructed above. The leftmost digit is at position number 1. Your program should stop processing and terminate when it encounters a line containing the sole digit 0.

### Output

For each  $n$  you have to output whether the  $n^{\text{th}}$  position of the above sequence is either 0 or 1. It need not produce any output for the final 0 in the input.

**Sample input** (available as file “C.in”):

```
1
2
9
123174360
123174361
123174362
0
```

**Sample output** (available as file “C.out”):

```
1
1
0
0
1
0
```