P0004. Strobogrammatic numbers   P21895_en

Johnny, Roy and Steffy are studying for the final exams. While they are taking a break, they have the following dialogue:

ROY: Have you seen that sign on the wall? They have hanged it upside down!

JOHNNY: You are right but, curiously, there is a number, 6180819, it is the same hanged right or upside down.

ROY: It's true!

STEFFY: The numbers which have this property are called *strobogrammatic numbers*.

ROY: What???

STEFFY: A natural number is called *strobogrammatic number* if it has the same value seen normally and upside down, taking into account that digits 0, 1 and 8 are symmetrical regarding to the horizontal axis, and that 6 and 9 are equal when are seen upside down.

JOHNNY: The first 21 strobogrammatic numbers are 0, 1, 8, 11, 69, 88, 96, 101, 111, 181, 609, 619, 689, 808, 818, 888, 906, 916, 986, 1001 and 1111.

STEFFY: However, the numbers 12, 44 or 991 are not strobogrammatic numbers: the first two numbers can not be interpreted when they are upside down and the third one, read when it is upside down, represents 166. Notice that, excepting 0, any number ending in 0 is *not* an strobogrammatic number.

Your task is to write a program that indicates if several given natural numbers are or are not strobogrammatic numbers, and counts how many of the strobogrammatic numbers are odd numbers.

Your program must include and use the function

bool *is_strobogrammatic* (**int** *n*);

that indicates if a natural number n is or is not an strobogrammatic number.

Input

The input is a sequence of natural numbers.

Output

For each natural number of the input, print if it is an strobogrammatic number or it is not. Afterwards, print an empty line and the number of odd strobogrammatic numbers read. Follow the format of the instance.

Sample input

```
1
2
8
11
101
111
1110
0
38
18
1881
44
69
96
99
123456789
969689696
```

Sample output

```
1 is strobogrammatic
2 is not strobogrammatic
8 is strobogrammatic
11 is strobogrammatic
101 is strobogrammatic
111 is strobogrammatic
1110 is not strobogrammatic
0 is strobogrammatic
38 is not strobogrammatic
18 is not strobogrammatic
1881 is strobogrammatic
44 is not strobogrammatic
69 is strobogrammatic
96 is strobogrammatic
99 is not strobogrammatic
123456789 is not strobogrammatic
969689696 is strobogrammatic

odd strobogrammatic: 6
```

Problem information

Author : Professorat de P1
Translator : Carlos Molina
Generation : 2025-05-13 10:53:39