Kids’ Riddle

Problem Description

Friends, have you ever taken the April Fools Contest 2017 at Codeforces? There is a problem called Kids’ Riddle. The problem description is given below:

Programmers’ kids solve this riddle in 5 – 10 minutes. How fast can you do it?

After long time thinking, the authors of our problem found out the rule. Just count the number of holes in hexadecimal notation. And now, it becomes the problem to you. Please solve the Kids’ Riddle problem.

Input

The input contains a single integer n(0<=n<=2000000000).

Output

Output a single integer.

Example Input

61441

Example Output

2

Hint

The hexadecimal notation of 61441 is F001, there are two holes in it.