

Problem A

Cypriot Game

Time Limit: 1 second

Memory Limit: 512 megabytes

Cuong and Mai are playing a game with numbers, originated in Cyprus - a small country in Europe. The game starts with a pair of positive integers (x, y) . They will take an alternative turn transforming this pair, Cuong will take the first turn. In each turn, a player may perform one of the following moves:

- If x is even, $(x, y) \rightarrow (\frac{x}{2}, y + \frac{x}{2})$;
- If y is even, $(x, y) \rightarrow (x + \frac{y}{2}, \frac{y}{2})$;

There might be 3 outcomes of the game:

- If the game reaches a state where both x and y are odd, a player will have no valid move and he/she will lose the game.
- If the game reaches a state where it has reached before, the game will end with a draw.

Assume that both Cuong and Mai playing optimally, you are given n , your task is to count the number of starting states (x, y) such that $1 \leq x, y \leq n$ and the game will end with each of the 3 outcomes.

Input

The input contains only one integer n ($1 \leq n \leq 10^9$).

Output

You should print 3 integers in 3 lines:

- The number of starting states that Cuong will win;
- The number of starting states that will lead to a draw;
- The number of starting states that Mai will win.

Sample Input

2

Sample Output

1
2
1

Explanation

There are 4 starting states:

- $(1, 1)$ Cuong has no move, thus Mai wins this game;
- $(2, 1)$ Cuong has only one move to make it $(1, 2)$, then Mai has only one move to make it $(2, 1)$, thus the game ends with a draw;
- $(1, 2)$ - this game will be similar to the previous one;
- $(2, 2)$ Cuong has two moves to make the pair $(1, 3)$ or $(3, 1)$. In either case, Mai has no more valid move. Thus Cuong wins this game.