

Splitting Numbers

We define the operation of splitting a binary number n into two numbers $a(n)$ and $b(n)$ as follows. Let $0 \leq i_1 < i_2 < \dots < i_k$ be the indices of the bits (with the least significant bit having index 0) in n that are 1. Then the indices of the bits of $a(n)$ that are 1 are i_1, i_3, i_5, \dots and the indices of the bits of $b(n)$ that are 1 are i_2, i_4, i_6, \dots

For example, if n is `110110101` in binary then, again in binary, $a = 010010001$ and $b = 100100100$.

Input

The input consists of a single integer n between `1` and `231 - 1` written in standard decimal (base 10) format on a single line.

Output

The output consists of a single line, containing the integers $a(n)$ and $b(n)$ separated by a single space. Both $a(n)$ and $b(n)$ should be written in decimal format.

Example 1

```
Input:
6
Output:
2 4
```

Example 2

```
Input:
7
Output:
5 2
```

Example 3

```
Input:
13
Output:
9 4
```