Splitting Numbers

We define the operation of splitting a binary number `n` into two numbers `a(n)` and `b(n)` as follows. Let `0 <= i1 < i2 < ... < ik` 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 `i1`, `i3`, `i5`, … and the indices of the bits of `b(n)` that are 1 are `i2`, `i4`, `i6`, …

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 `2^31 - 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
```