Problem I: Splitting Numbers

We define the operation of splitting a binary number n into two numbers $a(n),b(n)$ as follows. Let $0 \leq i_1 < i_2 < ... < i_k$ 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,… and the indices of the bits of $b(n)$ that are 1 are i_2, i_4, i_6,…

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

Input Format

Each test case consists of a single integer n between 1 and 2^{31}-1 written in standard decimal (base 10) format on a single line. Input is terminated by a line containing '`0`' which should not be processed.

Output Format

The output for each test case 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.

Sample Input

```
6
7
13
0
```

Sample Output

```
2 4
5 2
9 4
```

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