

# Negative base

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Have you ever heard of base-2 (binary) numbers?

Well, of course you did!!! You are a computer scientist.

How about base-(-2) numbers? Yes, you read it right we are talking about a base that is negative!!!

An integer  $n$  written in base-(-2) is a sequence of bits (  $b_i$  ), written right to left. Each of which is either **0** or **1** (no negative bits are allowed) and the following must hold:

$$n = b_0 + b_1 * (-2) + b_2 * (-2)^2 + b_3 * (-2)^3 + \dots$$

Every integer in base-10 has a unique representation in base-(-2) and no negative signs are ever needed.

Your task is to write a program that given a number in base-10 finds its base-(-2) representation.

## Input

The number in base-10,  $-1,000,000,000 \leq N \leq 1,000,000,000$ .

## Output

The corresponding number in base-(-2) with no leading zeros.

### Example 1

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Input:
1
Output:
1
```

### Example 2

```
Input:
7
Output:
11011
```

### Example 3

```
Input:
-2
Output:
10
```

### Example 4

```
Input:
0
Output:
0
```

