
Numbers in base -2

P93533_en

Write a program to print numbers in base -2.

Input

Input consists of several integer numbers, each with at most nine digits.

Output

For every given number, print it in base -2 following the format of the example.

Sample input 1

```
0
1
2
3
-1
-2
-3
-6
10
999999999
-999999999
```

Sample output 1

```
0: 0
1: 1
2: 110
3: 111
-1: 11
-2: 10
-3: 1101
-6: 1110
10: 11110
999999999: 1001100111011111101111000000011
-999999999: 11000101101001010100101000000001
```

Problem information

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