

C. Increasing Sequence with Fixed OR

time limit per test: 2 seconds

memory limit per test: 512 megabytes

input: standard input

output: standard output

You are given a positive integer n . Find the **longest** sequence of positive integers $a = [a_1, a_2, \dots, a_k]$ that satisfies the following conditions, and print the sequence:

- $a_i \leq n$ for all $1 \leq i \leq k$.
- a is strictly increasing. That is, $a_i > a_{i-1}$ for all $2 \leq i \leq k$.
- $a_i \mid a_{i-1} = n$ for all $2 \leq i \leq k$, where \mid denotes the **bitwise OR** operation.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \leq t \leq 1000$). Description of the test cases follows.

The only line of each test case contains one integer n ($1 \leq n \leq 10^{18}$).

It's guaranteed that the sum of lengths of the longest valid sequences does not exceed $5 \cdot 10^5$.

Output

For each testcase, print two lines. In the first line, print the length of your constructed sequence, k . In the second line, print k positive integers, denoting the sequence. If there are multiple longest sequences, you can print any of them.

Example

input
4
1
3
14
23
output
1
1
3
1 2 3
4
4 10 12 14
5
7 18 21 22 23

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Codeforces Round 958 (Div. 2)

Finished

Practice

→ Virtual participation

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Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, wi

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
270834287	Jul/16/2024 11:16	Accepted

→ Problem tags

bitmasks

constructive algorithms

greedy

No tag edit access

→ Contest materials

Announcement (en)

Tutorial (en)

