

# Troll Coder

Time limit: 1000 ms

Memory limit: 256 MB



Interactive

You have found a huge treasure on an island, but the only access point to that island is a bridge guarded by a giant Troll! In order to cross the bridge, you have to guess a sequence of  $N$  bits by submitting queries. For each query, the Troll will tell you how many bits you guesses correctly until you guess the correct sequence.

## Interaction

Your program must exchange information with the Troll by submitting queries and reading answers.

Note that you must flush the buffer so that the output reaches the Troll. [Here](#) we illustrate it for several languages.

At the beginning of each test case, the Troll will give you a single integer  $N$  which will represent the length of the sequence.

To submit a query, your program should output the letter `Q` followed by a space and by a binary sequence of length  $N$  with each bit separated by a space. After each query you will receive an integer denoting the number of correct bits. The last submission will be your final answer and it should start with an `A` followed by a space and by a binary sequence of length  $N$  with each bit separated by a space.

## Constraints and notes

- This task is **NOT** [adaptive](#)
- $1 \leq N \leq 100$
- Your program can submit at most  $N + 1$  queries before arriving at the correct answer.

Interaction

Explanation

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This sequence has 6 bits and the solution is 101101.

Q 0 0 0 0 0 0

The first query is Q 0 0 0 0 0 0 which has 2 correct bits.

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The correct answer is given in the form of A 1 0 1 1 0 1.

A 1 0 1 1 0 1