

Equal Strings

Input file: **standard input**
Output file: **standard output**
Time limit: 3 seconds
Memory limit: 512 megabytes

This is an interactive problem.

$n - 1$ **random** binary strings s_i of length 50 are generated. Then, one of the strings is duplicated, and all n strings are shuffled. You need to find indexes of equal strings.

You can ask at most 25 000 queries. Each query is a pair (i, j) . The answer to the query is the Hamming distance between s_i and s_j — the number of positions where they differ.

It is guaranteed that all strings are picked randomly from the uniform distribution. Also, the list of strings is fixed for each test — interactor is not adaptive.

Interaction Protocol

First, the interactor prints one integer n ($2 \leq n \leq 1000$) — the total number of strings.

Then, you can ask at most 25 000 queries in the format “i j” ($1 \leq i, j \leq n, i \neq j$). Don't forget to flush the output after each query!

For each query, you will receive one integer d ($0 \leq d \leq 50$) — the Hamming distance between s_i and s_j . After receiving $d = 0$, your program should terminate.

Example

standard input	standard output
4	
21	1 2
23	2 3
21	1 4
0	2 4

Note

Strings in the sample:

- 10110000010010010101011100011000000011001011000101
- 10101101000111001111100000010010000100101011100101
- 10011110110010011111100111011000010100011101111011
- 10101101000111001111100000010010000100101011100101