## Problem 5 – Bits to Bits

You are given a list of **N** numbers.

Get the most right **30 bits** of every number and concatenate them.

Write a program to find the length of the **longest sequence of zeroes** and the length of the **longest sequence of ones** from the obtained concatenated sequence.

See examples for clarification.

### Input

The input data should be read from the console.

On the first line there will be the number **N**.

On each of the next **N** lines there will be a number from the list.

The input data will always be valid and in the format described. There is no need to check it explicitly.

### Output

The output data should be printed on the console.

On the first output line print the length of the longest sequence of zeroes.

On the third output line print the length of the longest sequence of ones.

### Constraints

* **N** will be between 1 and 100, inclusive.
* All numbers will be integers between 0 and 1073741823, inclusive.
* Allowed working time for your program: 0.1 seconds. Allowed memory: 16 MB.

### Examples

|  |  |  |
| --- | --- | --- |
| **Example input** | **Example output** | **Explanation** |
| 2  3  1073737743 | 28  20 | Bit sequence:  000000000000000000000000000011  111111111111111111000000001111 |
| 3  715827882  715827882  357913941 | 2  1 | Bit sequence:  101010101010101010101010101010  101010101010101010101010101010  010101010101010101010101010101 |
| 4  262267  1337  10000000  28244445 | 19  5 | Bit sequence:  000000000001000000000001111011  000000000000000000010100111001  000000100110001001011010000000  000001101011101111100111011101 |