Problem 5 – Students to Students and 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 111111111111111100000000001111
3 715827882 715827882 357913941	2 1	Bit sequence: 101010101010101010101010101010 101010101010101010101010101010 010101010101010101010101010101
4 262267 1337 10000000 28244445	19 5	Bit sequence: 000000000001000000000001111011 000000000000000000010100111001 000000100110001001011010000000 000001101011101111100111011101