



HOME TOP CATALOG CONTESTS GYM PROBLEMSET GROUPS RATING EDU API CALENDAR HELP

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

## A. Circuit

time limit per test: 1 second memory limit per test: 256 megabytes

Alice has just crafted a circuit with n lights and 2n switches. Each component (a light or a switch) has two states: on or off. The lights and switches are arranged in a way that:

- Each light is connected to exactly two switches.
- Each switch is connected to exactly one light. It's unknown which light each switch is connected to.
- · When all switches are off, all lights are also off.
- If a switch is toggled (from on to off, or vice versa), the state of the light connected to it will also toggle

Alice brings the circuit, which shows only the states of the 2n switches, to her sister Iris and gives her a riddle: what is the minimum and maximum number of lights that can be turned on?

Knowing her little sister's antics too well, Iris takes no more than a second to give Alice a correct answer. Can you do the same?

### Input

Each test consists of multiple test cases. The first line contains a single integer t (  $1 \le t \le 500$ ) — the number of test cases. The description of the test cases follows.

The first line of each test case contains a single integer n ( $1 \le n \le 50$ ) — the number of lights in the circuit.

The second line of each test case contains 2n integers  $a_1,a_2,\ldots,a_{2n}$  ( $0\leq a_i\leq 1$ ) — the states of the switches in the circuit.  $a_i=0$  means the i-th switch is off, and  $a_i=1$  means the i-th switch is on.

# Output

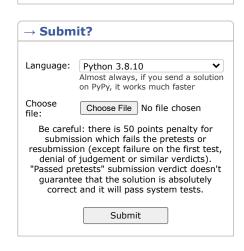
For each test case, output two integers — the minimum and maximum number of lights, respectively, that can be turned on.

# Example



### Note

# Contest is running 00:06:39 Contestant



ightarrow Last submissions			
Submission	Time	Verdict	
289265591	Nov/01/2024 19:02	Wrong answer on pretest 1	
289264396	Nov/01/2024 19:00	Wrong answer on pretest 1	

→ Score table		
	Score	
<u>Problem A</u>	274	
<u>Problem B</u>	411	
<u>Problem C</u>	685	
<u>Problem D</u>	959	
<u>Problem E</u>	1233	
<u>Problem F</u>	1644	
Successful hack	100	
Unsuccessful hack	-50	
Unsuccessful submission	-50	
Resubmission	-50	
* If you calve puebloss on 01.52 from the first attempt		

st If you solve problem on 01:53 from the first attempt

In the first test case, there is only one light in the circuit, and no switch is on, so the light is certainly off.

In the second test case, there is only one light in the circuit, but one switch connected to it is on, so the light is on.

In the third test case, there is only one light in the circuit, and both switches are on, so the light is off as it was toggled twice.

In the fourth test case, to have no lights on, the switches can be arranged in this way:

- Switch 1 and switch 4 are connected to light 1. Since both switches are off, light 1 is also off.
- Switch 2 and switch 6 are connected to light 2. Since both switches are off, light 2 is also off.
- Switch 3 and switch 5 are connected to light 3. Both switches are on, so light 3 is toggled twice from its initial off state, and thus also stays off.

And to have 2 lights on, the switches can be arranged in this way:

- Switch 1 and switch 2 are connected to light 1. Since both switches are off, light 1 is also off.
- Switch 3 and switch 4 are connected to light 2. Since switch 3 is on and switch 4 is off, light 2 is toggled once from its initial off state, so it is on.
- Switch 5 and switch 6 are connected to light 3. Since switch 5 is on and switch 6 is off, light 3 is toggled once from its initial off state, so it is on.

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