

Ada and Parties

Ada the Ladybug is already planning her birthday party. It is not an easy process since she has many friends. At first, she had a plan to invite only subset of her friends but now her plans are different. She wants to satisfy all her friends so she is going to hold multiple parties. Anyway she wants to satisfy fact, that each of her friends will have all of their friends at the same party while there will be no one, who is not his/her friend.

Problem is, that with current layout, it might not be possible. It is not so easy to let two bugs become friend, and it is not so "nice" to make them enemies... yet both are possible. Ada asked you to find the minimal number of such operations so that the parties will be possible! Ada doesn't want to do many of such operations so she already made a little research and found out she won't need more than **12** such operations.

Input

The first line contains an integer $1 \leq T \leq 100$, the number of test-cases.

The first line of each test-case begins with $1 \leq N \leq 62$, the number of her friends.

Each of next N lines contain N integers $A_{i,j}$ (either **0** or **1**), where **1** means the i^{th} friend likes j^{th} (and **0** means the opposite)

Note, that the matrix will be symmetrical.

Each insect is friend with itself!

Output

For each test-case output the minimal number of introductions and antagonizations.

Example Input

```
7
7
1 0 0 0 0 0
0 1 1 1 0 0
0 1 1 0 0 1
0 1 0 1 1 1
0 0 0 1 1 1
0 0 0 1 1 1
0 0 1 0 0 1
8
1 1 1 0 0 0 1 1
1 1 1 0 0 0 0 1
1 1 1 0 0 0 0 0
0 0 0 1 1 0 0 0
0 0 0 1 1 1 0 0
0 0 0 0 1 1 0 0
1 0 0 0 0 0 1 1
1 1 0 0 0 0 1 1
8
```

10000000
01100001
01100000
00010000
00001110
00001110
00001110
01000001
3
100
010
001
7
1100010
1100101
0011001
0011000
0100100
1000011
0110011
6
111000
111011
111000
000100
010011
010011
5
11111
11110
11101
11011
10111

Example Output

2
4
1
0
4
2
2