

## 4041 Eventown Problem

Eventown has  $N$  inhabitants. Each pair of the citizens has a friendship index between them, which can be any integer between  $-M$  and  $+M$ . More specifically, for citizen  $i$  and  $j$  ( $i \neq j$ ), we use  $f[i, j]$  to denote their friendship index. Suppose  $f[i, j] = f[j, i]$ . If  $f[i, j] = 0$ , then it means  $i$  and  $j$  don't know each other; else if  $f[i, j] < 0$ , then they don't like each other; else they like each other. The citizens of Eventown wish to form two clubs such that every citizen belongs to exactly one club. We use  $S[i, j]$  to indicate if citizens  $i$  and  $j$  join the same club, i.e., if  $i$  and  $j$  join the same club then  $S[i, j] = 1$ ; 0 otherwise. We say citizen  $i$  is happy if  $\sum_j (-1)^{1-S[i, j]} f[i, j] \geq 0$ .

So the mayor of Eventown wants to know how to form the two clubs to achieve the maximum happiness. I.e., you need to write a program to determine the values of  $S[i, j]$ 's in order to maximize

$$\sum_i \sum_j (-1)^{1-S[i, j]} f[i, j]$$

.

### Input

The first line of input is the number of test cases. For each test case, the first line contains two integers:  $N$  and  $M$ , and then there follow  $N$  lines, where the  $j$ -th element in the  $i$ -th line ( $1 \leq i, j \leq N$ ) contains the value of  $f[i, j] \in [-M, \dots, +M]$ . Here we let  $f[i, i] = 0$ , for  $i = 1, \dots, N$ . Note that  $N$  is at most 30 and  $M$  is at most 1000.

### Output

For each case, the output contains the corresponding maximum value.

### Sample Input

```
2
3 2
0 1 2
1 0 -1
2 -1 0
5 2
0 2 0 1 0
2 0 2 0 0
0 2 0 -1 1
1 0 -1 0 -2
0 0 1 -2 0
0
```

### Sample Output

```
4
14
```