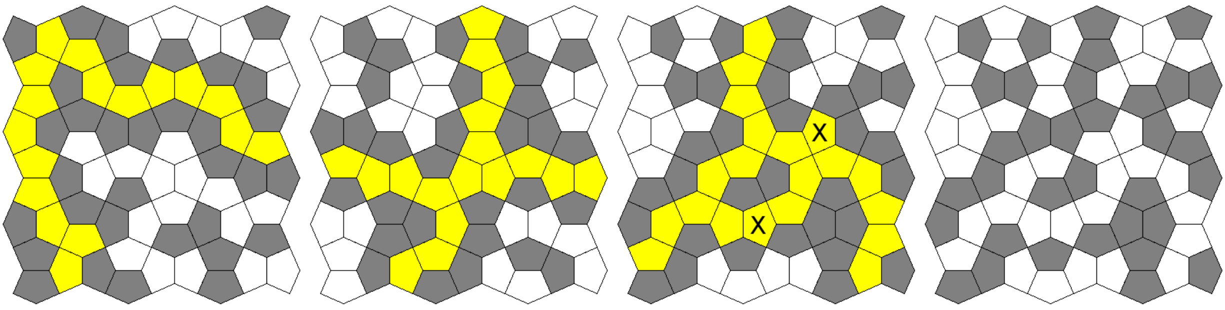
The *Cairo pentagonal tiling* is a decomposition of the plane using semiregular pentagons. Its name is given because several streets in Cairo are paved using variations of this design.

Consider a bounded tiling where each pentagon is either *clear* (white) or *filled in* (grey). A *corridor* is a maximal set of clear adjacent pentagons that connect the four borders of the tiling. Pentagons are considered adjacent if they share an edge, not just a corner. It is easy to verify that there can be at most one corridor in each tiling. A corridor is said to be *minimal* if it has no superfluous pentagon, that is, if any pentagon of the corridor was filled in, the set of remaining pentagons would not be a corridor.



(a) Minimal corridor (b) Minimal corridor (c) No minimal corridor (d) No corridor

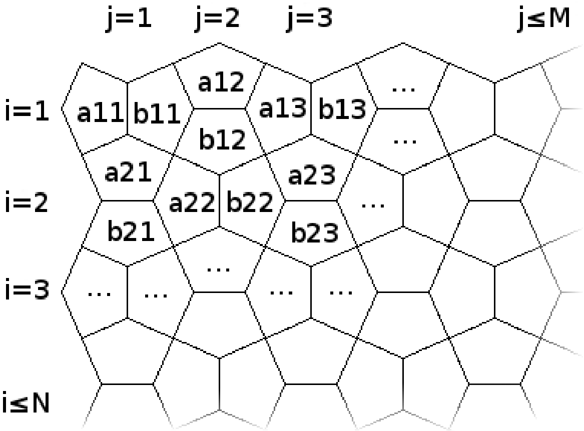
The figure above depicts four example tilings. In the first three cases, there is a corridor which is highlighted in yellow. Besides, the corridors of figures (a) and (b) are minimal, but the one in figure (c) is not: for example, the tiles marked 'X' (among others) could be filled in and a corridor would still exist. In the rightmost tiling there is no corridor.

The tilings shown in figures (a) and (c) correspond to sample input 1.

Write a program that reads textual descriptions of Cairo tilings, and for each one determines if a corridor exists and is minimal. In the latter case, the program should compute the *size of the corridor*, i.e., the number of clear pentagonal tiles of the corridor.

Input

The first line of input is a positive decimal integer T of tilings to be processed. Each tiling description k has a first line with two positive decimal integers, N_k and M_k, separated by a space. The following N_k lines contain $2 \times M_k$ binary digits representing pairs a_{ij}, b_{ij} of tiles ('0' is clear and '1' is full) in alternating horizontal/vertical adjacency following a "checkerboard" pattern, as is illustrated in the figure on the right.



Constraints

$1 \leq T \leq 10$ Number of tilings

$1 \leq \sum_{k=1}^{T} N_k \leq 250$ Total number of lines

$1 \leq \sum_{k=1}^{T} M_k \leq 250$ Total number of tile pairs

Output

The output consists of T lines; the k-th line should be the size of the corridor of the k-th tiling, if there exists a minimal corridor, and '`NO MINIMAL CORRIDOR`', otherwise.

Sample Input

```
3
6 6
010101001001
001000101100
110101001101
010010000100
001110110010
001001101010
6 6
010010110010
001100100111
000110100101
011001100101
100100011100
011010001101
3 4
11110111
01000000
11110111
```

Sample Output

```
17
NO MINIMAL CORRIDOR
9
```