

## B - Froggy

### Context

One of the most successful games created for the Spectrum was Frogger. In this game, created in 1983, you controlled a charming little frog, called Froggy, who wants to cross to the other side of the street.



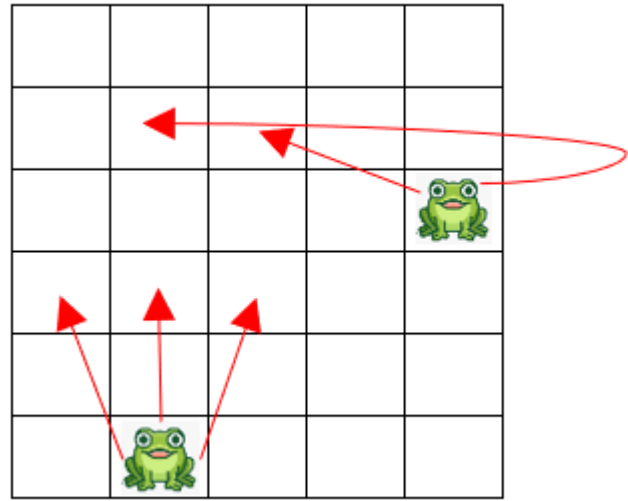
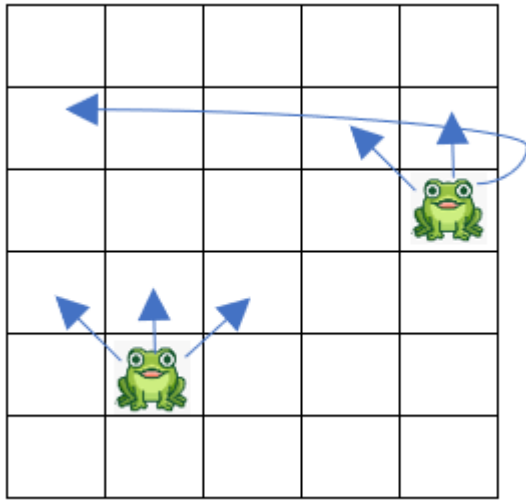
The street is full of dangers, and Froggy loses life when encountering an obstacle. You have to help Froggy to cross the street.

### The Problem

The street of Froggy has the form of a square grid of a certain size,  $T$  (of the same width and height).

Suppose that, in each cell of the grid, we have a number, between 0 and 9, indicating the life that Froggy loses when she is in that cell. Froggy always begins at the bottom of the street (the last row of cells), and ends in the top of the street (the first row of cells). She can decide the column where she begins and ends.

From a given cell, Froggy can walk to the cell which is up, up-right or up-left. She can also jump a bigger distance: 2 rows up; 2 up and 1 left; 2 up and 1 right; 1 up and 2 left; or 1 up and 2 right. However, these jumps are tiring, and Froggy can only make a limited number of them, a maximum of  $J$  jumps. You can see a scheme of the walks (blue) and jumps (red) of Froggy in the image below.



As shown in the image, the grid is *circular* in the horizontal axis. That is, when Froggy walks or jumps beyond the left or right margins, she appears at the other side of the grid.

Given the grid where Froggy is located, you have to compute the minimum amount of live that she will lose to cross the street.

Note: Froggy always starts in the last row, and ends in the first row. However, if she is located in the second row, she can do a jump (2 up), and finish without touching the first row.

## The Input

The input contains several test cases. The first line of the input indicates the number of test cases.

For each test case, first there are three lines with integer values: the size of the grid  $T$  (from 1 to 40); the maximum number of jumps that Froggy can do,  $J$ ; and the initial live of Froggy,  $L$ , given by an integer number. Then, there are  $T$  lines, each of them with  $T$  characters from 0 to 9, indicating the life that Froggy loses in that cell.

## The Output

For each test case, you have to output a single line. This line will contain the minimum amount of life that Froggy loses to cross the street. However, if this amount is greater or equal to her initial life,  $L$ , the output will be:

Froggy dies

## Sample Input

```
4
5
1
100
52826
79173
88988
41253
34261
6
2
```

40  
173636  
887997  
297987  
889961  
917966  
987179  
4  
0  
10  
9999  
8282  
2534  
2735  
6  
1  
40  
885635  
697917  
999999  
907366  
555159  
830837

## Sample Output

6  
11  
Froggy dies  
8

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