3D

The floor of Gholam's bedroom is tiled with white and yellow tiles Sometime when he is bored, he stands on one of the tiles and starts to walk along the row he is standing on. He first decides on a number n and starts to walk n steps. If he reaches the wall, he turns back and continues to walk in the opposite direction. He continues until he takes n steps. Note that turning back besides a wall does not count as a step. He counts how many yellow tiles he steps on.

For example, the figure below shows a row in the floor. The colors of the tiles are shown with the characters 'Y' and 'W' for yellow and white tiles respectively. If he starts at tille 3 facing to the right, and decides to take 7 steps, he finally stops a tile 2. During this walk, he steps 3 times on yellow tiles.

1	2	3	4	5	6
Y	W	W	Y	W	Y

Input

The input contains T test cases. The first line of input has only the integer T. Each test case contains two lines. The first line contains two integers m ($3 \leq m \leq 100$) and n ($1 \leq n \leq 1000$), which is the number of steps Gholam takes. The second line contains m integers describing the tiles in the row and is in the following format:

$a_1\ a_2\ \ldots\ a_m$

Each a_i is either 0, 1, 2, or 3. If $a_i = 0$, then a_i has a yellow tile, and $a_i > 0$ indicates that a_i has a white tile. If $a_i = 2$, then Gholam is starting from the tile a_i, facing to the right, and if $a_i = 3$ then he is starting from the tile a_i, facing to the left. The numbers are separated by space characters. You may assume that exactly one of the numbers is 2 or 3. Note that it is implied that Gholam always starts from a white tile.

Output

For each test case, write a single line in the output having a single number which is the number of times Gholam steps on a yellow tile.

Note: The first test case corresponds to the example given in the problem description.

Sample Input

```
2
6 7
0 1 2 0 1 0
5 3
0 3 1 0 0
```

Sample Output

```
3
1
```