

Travelling Knight

Your task is simple. A knight is placed on the top left corner of a chessboard having $2n$ rows and $2n$ columns. In how many ways can it move such that it ends up at a corner after at most K moves?

Input

The first line contains T the number of test cases. Each of the next T lines contain 2 integers : n, k

Output

Output T lines, one for each test case, containing the required total number of configurations. Since the answers can get very big, output the answer modulo 1000007.

Example

Input:

```
3
2 1
2 2
3 3
```

Output:

```
1
5
7
```

Constraints

$1 \leq T \leq 20$

$2 \leq n \leq 12$

$1 \leq k \leq 1000000000$