Problem F - Walking on a Hypercube

An n-cube is a unit cube that lies in n dimensional world. If you put this cube on a coordinate system in $\mathbb{R}^n$, all the *corners* of the cube are at coordinate $(x_1, x_2, \cdots, x_n)$ where $x_i \in \{0, 1\}$ for every i. An edge on a n-cube is the segment connecting two corners A and A', and they only differ at exactly one coordinate.

One day, Little Tomato saw an ant standing at the corner $(0, 0, \cdots, 0)$ of an n-cube. It started moving along the edges, and made turns at corners. The ant could turn back immediately right after it arrived some corner. Little Tomato wrote down all the coordinates of corners that the ant had traveled through.

Soon he wondered, in how many ways that he can write down exactly $L + 1$ coordinates, with both the first and last one are the origin.

Input

The first line contains an integer T $(1 \le T \le 100)$ indicating the number of test cases.

For each test case, there are two integers n, L $(1 \le n \le 100000, 0 \le L \le 10^{15})$ in a line separated by a whitespace.

Output

For each test case, please output the number of different lists modulo 1000000007.

Sample Input

```
5
2 8
7 9
514 0
50216 99819872
100000 2
```

Sample Output

```
128
0
1
788450594
100000
```