Problem H. PermutationXDD

Time limit 2000 ms
Memory limit 1024MB

Problem Description

At the Grand Permutation Academy, there are n students, numbered 1 to n, and n seats in a row, also numbered 1 to n.

The students are assigned a seating arrangement, which is a permutation $p = \{p_1, p_2, \ldots, p_n\}$ of $\{1, 2, \ldots, n\}$. This means the student with number p_i sits in seat i.

The "chaos score" for the student in seat i is the absolute difference between their seat number (i) and their own student number (p_i). This score is $|i - p_i|$.

The **Total Chaos** of an arrangement p is defined as the sum of all individual chaos scores:

$$\sum_{i=1}^{n} |i - p_i|$$

The headmaster is curious: How many distinct permutations p of $\{1, 2, \ldots, n\}$ have a Total Chaos score of exactly k?

Find this count, modulo $10^9 + 7$.

Input format

The first line and the only line contains two integer n, k ($1 \leq n \leq 40$, $0 \leq k \leq n^2$)

Output format

Print a single integer: the number of permutations of $\{1, 2, \ldots, n\}$ that have a Total Chaos score of k, modulo $10^9 + 7$.

Subtask score

Subtask	Score	Additional Constraints
0	0	Sample testcases
1	10	$n \leq 8$
2	30	$n \leq 12$
3	60	No additional constraints

Sample

Sample Input 1

```
3 2
```

Sample Output 1

```
2
```

Notes

In sample test 1, the permutations are $\{1, 3, 2\}$ (Chaos $= |1-1| + |2-3| + |3-2| = 2$) and $\{2, 1, 3\}$ (Chaos $= |1-2| + |2-1| + |3-3| = 2$).