2400. Number of Ways to Reach a Position After Exactly k Steps

Description

You are given two **positive** integers `startPos` and `endPos`. Initially, you are standing at position `startPos` on an **infinite** number line. With one step, you can move either one position to the left, or one position to the right.

Given a positive integer `k`, return *the number of **different** ways to reach the position* `endPos` *starting from* `startPos`*, such that you perform **exactly*** `k` *steps*. Since the answer may be very large, return it **modulo** $10^9 + 7$.

Two ways are considered different if the order of the steps made is not exactly the same.

Note that the number line includes negative integers.

Example 1:

```
Input: startPos = 1, endPos = 2, k = 3
Output: 3
Explanation: We can reach position 2 from 1 in exactly 3 steps in three ways:
- 1 -> 2 -> 3 -> 2.
- 1 -> 2 -> 1 -> 2.
- 1 -> 0 -> 1 -> 2.
It can be proven that no other way is possible, so we return 3.
```

Example 2:

```
Input: startPos = 2, endPos = 5, k = 10
Output: 0
Explanation: It is impossible to reach position 5 from position 2 in exactly 10 steps.
```

Constraints:

- `1 <= startPos, endPos, k <= 1000`