

5527. Number of Sets of K Non-Overlapping Line Segments

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Given  $n$  points on a 1-D plane, where the  $i^{th}$  point (from  $0$  to  $n-1$ ) is at  $x = i$ , find the number of ways we can draw **exactly**  $k$  **non-overlapping** line segments such that each segment covers two or more points. The endpoints of each segment must have **integral coordinates**. The  $k$  line segments **do not** have to cover all  $n$  points, and they are **allowed** to share endpoints.

Return the number of ways we can draw  $k$  non-overlapping line segments. Since this number can be huge, return it modulo  $10^9 + 7$ .

User Accepted:	0
User Tried:	0
Total Accepted:	0
Total Submissions:	0
Difficulty:	Medium

Example 1:



**Input:**  $n = 4, k = 2$   
**Output:** 5  
**Explanation:**  
The two line segments are shown in red and blue.  
The image above shows the 5 different ways  $\{(0,2),(2,3)\}, \{(0,1),(1,3)\}, \{(0,1),(2,3)\}, \{(1,2),(2,3)\}, \{(0,1),(1,2)\}$ .

Example 2:

**Input:**  $n = 3, k = 1$   
**Output:** 3  
**Explanation:** The 3 ways are  $\{(0,1)\}, \{(0,2)\}, \{(1,2)\}$ .

Example 3:

**Input:**  $n = 30, k = 7$   
**Output:** 796297179  
**Explanation:** The total number of possible ways to draw 7 line segments is 3796297200. Taking this number modulo  $10^9 + 7$  gives 796297179.

Example 4:

**Input:**  $n = 5, k = 3$   
**Output:** 7

Example 5:

**Input:**  $n = 3, k = 2$   
**Output:** 1

Constraints:

- $2 \leq n \leq 1000$
- $1 \leq k \leq n-1$

JavaScript



```
1  /**
2   * @param {number} n
3   * @param {number} k
4   * @return {number}
5   */
6  var numberOfSets = function(n, k) {
7
8  };
```

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