

# 1383. Maximum Performance of a Team

Hard

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You are given two integers  $n$  and  $k$  and two integer arrays `speed` and `efficiency` both of length  $n$ . There are  $n$  engineers numbered from  $1$  to  $n$ . `speed[i]` and `efficiency[i]` represent the speed and efficiency of engineer  $i$  (1-indexed).  
Choose **at most**  $k$  different engineers out of the  $n$  engineers to form a team with the maximum **performance**.  
The performance of a team is the sum of its engineers' speeds multiplied by the minimum efficiency among its engineers.  
Return *the maximum performance of this team*. Since the answer can be a huge number, return it **modulo**  $10^9 + 7$ .

### Example 1:

**Input:**  $n = 6$ , `speed = [2,10,3,1,5,8]`, `efficiency = [5,4,3,9,7,2]`,  $k = 2$   
**Output:** 60  
**Explanation:**  
We have the maximum performance of the team by selecting engineer 2 (with speed=10 and efficiency=4)

### Example 2:

**Input:**  $n = 6$ , `speed = [2,10,3,1,5,8]`, `efficiency = [5,4,3,9,7,2]`,  $k = 3$   
**Output:** 68  
**Explanation:**  
This is the same example as the first but  $k = 3$ . We can select engineer 1, engineer 2 and engineer 5

### Example 3:

**Input:**  $n = 6$ , `speed = [2,10,3,1,5,8]`, `efficiency = [5,4,3,9,7,2]`,  $k = 4$   
**Output:** 72

### Constraints:

- $1 \leq k \leq n \leq 10^5$
- `speed.length == n`
- `efficiency.length == n`
- $1 \leq \text{speed}[i] \leq 10^5$
- $1 \leq \text{efficiency}[i] \leq 10^8$

Seen this question in a real interview before? 1/4

Yes No

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💡 Hint 1

💡 Hint 2

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