Problem 3439: Reschedule Meetings for Maximum Free Time I

Problem Information

Difficulty: Medium
Acceptance Rate: 53.91%
Paid Only: No
Tags: Array, Greedy, Sliding Window

Problem Description

You are given an integer `eventTime` denoting the duration of an event, where the event occurs from time `t = 0` to time `t = eventTime`.

You are also given two integer arrays `startTime` and `endTime`, each of length `n`. These represent the start and end time of `n` **non-overlapping** meetings, where the `ith` meeting occurs during the time `[startTime[i], endTime[i]]`.

You can reschedule **at most** `k` meetings by moving their start time while maintaining the **same duration** , to **maximize** the **longest** _continuous period of free time_ during the event.

The **relative** order of all the meetings should stay the _same_ and they should remain non-overlapping.

Return the **maximum** amount of free time possible after rearranging the meetings.

Note that the meetings can **not** be rescheduled to a time outside the event.

Example 1:

Input: eventTime = 5, k = 1, startTime = [1,3], endTime = [2,5]

Output: 2

Explanation:

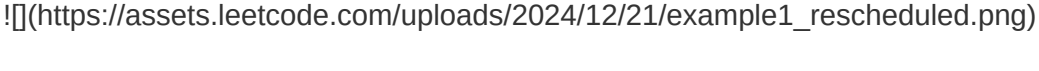
Reschedule the meeting at `[1, 2]` to `[2, 3]`, leaving no meetings during the time `[0, 2]`.

Example 2:

Input: eventTime = 10, k = 1, startTime = [0,2,9], endTime = [1,4,10]

Output: 6

Explanation:



Reschedule the meeting at `[2, 4]` to `[1, 3]`, leaving no meetings during the time `[3, 9]`.

Example 3:

Input: eventTime = 5, k = 2, startTime = [0,1,2,3,4], endTime = [1,2,3,4,5]

Output: 0

Explanation:

There is no time during the event not occupied by meetings.

Constraints:

* `1 <= eventTime <= 109` * `n == startTime.length == endTime.length` * `2 <= n <= 105` * `1 <= k <= n` * `0 <= startTime[i] < endTime[i] <= eventTime` * `endTime[i] <= startTime[i + 1]` where `i` lies in the range `[0, n - 2]`.

Code Snippets

C++:

```
class Solution {
public:
int maxFreeTime(int eventTime, int k, vector<int>& startTime, vector<int>&
endTime) {

}
};
```

Java:

```
class Solution {
public int maxFreeTime(int eventTime, int k, int[] startTime, int[] endTime)
{

}
}
```

Python3:

```
class Solution:
def maxFreeTime(self, eventTime: int, k: int, startTime: List[int], endTime:
List[int]) -> int:
```