Problem 2187: Minimum Time to Complete Trips

Problem Information

Difficulty: Medium
Acceptance Rate: 39.38%
Paid Only: No
Tags: Array, Binary Search

Problem Description

You are given an array `time` where `time[i]` denotes the time taken by the `ith` bus to complete **one trip**.

Each bus can make multiple trips **successively** ; that is, the next trip can start **immediately after** completing the current trip. Also, each bus operates **independently** ; that is, the trips of one bus do not influence the trips of any other bus.

You are also given an integer `totalTrips`, which denotes the number of trips all buses should make **in total**. Return _the**minimum time** required for all buses to complete **at least** _`totalTrips` _trips_.

Example 1:

Input: time = [1,2,3], totalTrips = 5 **Output:** 3 **Explanation:** - At time t = 1, the number of trips completed by each bus are [1,0,0]. The total number of trips completed is 1 + 0 + 0 = 1. - At time t = 2, the number of trips completed by each bus are [2,1,0]. The total number of trips completed is 2 + 1 + 0 = 3. - At time t = 3, the number of trips completed by each bus are [3,1,1]. The total number of trips completed is 3 + 1 + 1 = 5. So the minimum time needed for all buses to complete at least 5 trips is 3.

Example 2:

Input: time = [2], totalTrips = 1 **Output:** 2 **Explanation:** There is only one bus, and it will complete its first trip at t = 2. So the minimum time needed to complete 1 trip is 2.

Constraints:

* `1 <= time.length <= 105` * `1 <= time[i], totalTrips <= 107`

Code Snippets

C++:

```
class Solution {
public:
long long minimumTime(vector<int>& time, int totalTrips) {

}
};
```

Java:

```
class Solution {
public long minimumTime(int[] time, int totalTrips) {

}
}
```

Python3:

```
class Solution:
def minimumTime(self, time: List[int], totalTrips: int) -> int:
```