Problem 2594: Minimum Time to Repair Cars

Problem Information

Difficulty: Medium
Acceptance Rate: 59.74%
Paid Only: No
Tags: Array, Binary Search

Problem Description

You are given an integer array `ranks` representing the **ranks** of some mechanics. ranksi is the rank of the ith mechanic. A mechanic with a rank `r` can repair n cars in `r * n2` minutes.

You are also given an integer `cars` representing the total number of cars waiting in the garage to be repaired.

Return _the**minimum** time taken to repair all the cars._

Note: All the mechanics can repair the cars simultaneously.

Example 1:

Input: ranks = [4,2,3,1], cars = 10 **Output:** 16 **Explanation:** - The first mechanic will repair two cars. The time required is 4 * 2 * 2 = 16 minutes. - The second mechanic will repair two cars. The time required is 2 * 2 * 2 = 8 minutes. - The third mechanic will repair two cars. The time required is 3 * 2 * 2 = 12 minutes. - The fourth mechanic will repair four cars. The time required is 1 * 4 * 4 = 16 minutes. It can be proved that the cars cannot be repaired in less than 16 minutes.

Example 2:

Input: ranks = [5,1,8], cars = 6 **Output:** 16 **Explanation:** - The first mechanic will repair one car. The time required is 5 * 1 * 1 = 5 minutes. - The second mechanic will repair four cars. The time required is 1 * 4 * 4 = 16 minutes. - The third mechanic will repair one car. The time required is 8 * 1 * 1 = 8 minutes. It can be proved that the cars cannot be repaired in less than 16 minutes.

Constraints:

* `1 <= ranks.length <= 105` * `1 <= ranks[i] <= 100` * `1 <= cars <= 106`

Code Snippets

C++:

```
class Solution {
public:
long long repairCars(vector<int>& ranks, int cars) {

}
};
```

Java:

```
class Solution {
public long repairCars(int[] ranks, int cars) {

}
}
```

Python3:

```
class Solution:
def repairCars(self, ranks: List[int], cars: int) -> int:
```