Problem 2895: Minimum Processing Time

Problem Information

Difficulty: Medium
Acceptance Rate: 69.90%
Paid Only: No
Tags: Array, Greedy, Sorting

Problem Description

You have a certain number of processors, each having 4 cores. The number of tasks to be executed is four times the number of processors. Each task must be assigned to a unique core, and each core can only be used once.

You are given an array `processorTime` representing the time each processor becomes available and an array `tasks` representing how long each task takes to complete. Return the _minimum_ time needed to complete all tasks.

Example 1:

Input: processorTime = [8,10], tasks = [2,2,3,1,8,7,4,5]

Output: 16

Explanation:

Assign the tasks at indices 4, 5, 6, 7 to the first processor which becomes available at `time = 8`, and the tasks at indices 0, 1, 2, 3 to the second processor which becomes available at `time = 10`.

The time taken by the first processor to finish the execution of all tasks is `max(8 + 8, 8 + 7, 8 + 4, 8 + 5) = 16`.

The time taken by the second processor to finish the execution of all tasks is `max(10 + 2, 10 + 2, 10 + 3, 10 + 1) = 13`.

Example 2:

Input: processorTime = [10,20], tasks = [2,3,1,2,5,8,4,3]

Output: 23

Explanation:

Assign the tasks at indices 1, 4, 5, 6 to the first processor and the others to the second processor.

The time taken by the first processor to finish the execution of all tasks is `max(10 + 3, 10 + 5, 10 + 8, 10 + 4) = 18`.

The time taken by the second processor to finish the execution of all tasks is `max(20 + 2, 20 + 1, 20 + 2, 20 + 3) = 23`.

Constraints:

* `1 <= n == processorTime.length <= 25000` * `1 <= tasks.length <= 105` * `0 <= processorTime[i] <= 109` * `1 <= tasks[i] <= 109` * `tasks.length == 4 * n`

Code Snippets

C++:

```
class Solution {
public:
int minProcessingTime(vector<int>& processorTime, vector<int>& tasks) {

}
};
```

Java:

```
class Solution {
public int minProcessingTime(List<Integer> processorTime, List<Integer>
tasks) {

}
```

```
}
```

Python3:

```
class Solution:
def minProcessingTime(self, processorTime: List[int], tasks: List[int]) ->
int:
```