Problem 3733: Minimum Time to Complete All Deliveries

Problem Information

Difficulty: Medium
Acceptance Rate: 32.34%
Paid Only: No
Tags: Math, Binary Search

Problem Description

You are given two integer arrays of size 2: `d = [d1, d2]` and `r = [r1, r2]`.

Two delivery drones are tasked with completing a specific number of deliveries. Drone `i` must complete `di` deliveries.

Each delivery takes **exactly** one hour and **only one** drone can make a delivery at any given hour.

Additionally, both drones require recharging at specific intervals during which they cannot make deliveries. Drone `i` must recharge every `ri` hours (i.e. at hours that are multiples of `ri`).

Return an integer denoting the **minimum** total time (in hours) required to complete all deliveries.

Example 1:

Input: d = [3,1], r = [2,3]

Output: 5

Explanation:

* The first drone delivers at hours 1, 3, 5 (recharges at hours 2, 4). * The second drone delivers at hour 2 (recharges at hour 3).

Example 2:

Input: d = [1,3], r = [2,2]

Output: 7

Explanation:

* The first drone delivers at hour 3 (recharges at hours 2, 4, 6). * The second drone delivers at hours 1, 5, 7 (recharges at hours 2, 4, 6).

Example 3:

Input: d = [2,1], r = [3,4]

Output: 3

Explanation:

* The first drone delivers at hours 1, 2 (recharges at hour 3). * The second drone delivers at hour 3.

Constraints:

* `d = [d1, d2]` * `1 <= di <= 109` * `r = [r1, r2]` * `2 <= ri <= 3 * 104`

Code Snippets

C++:

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

}
};
```

Java:

```
class Solution {
public long minimumTime(int[] d, int[] r) {

}
}
```

Python3:

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