Problem 2513: Minimize the Maximum of Two Arrays

Problem Information

Difficulty: Medium
Acceptance Rate: 31.84%
Paid Only: No
Tags: Math, Binary Search, Number Theory

Problem Description

We have two arrays `arr1` and `arr2` which are initially empty. You need to add positive integers to them such that they satisfy all the following conditions:

* `arr1` contains `uniqueCnt1` **distinct** positive integers, each of which is **not divisible** by `divisor1`. * `arr2` contains `uniqueCnt2` **distinct** positive integers, each of which is **not divisible** by `divisor2`. * **No** integer is present in both `arr1` and `arr2`.

Given `divisor1`, `divisor2`, `uniqueCnt1`, and `uniqueCnt2`, return _the**minimum possible maximum** integer that can be present in either array_.

Example 1:

Input: divisor1 = 2, divisor2 = 7, uniqueCnt1 = 1, uniqueCnt2 = 3 **Output:** 4 **Explanation:** We can distribute the first 4 natural numbers into arr1 and arr2. arr1 = [1] and arr2 = [2,3,4]. We can see that both arrays satisfy all the conditions. Since the maximum value is 4, we return it.

Example 2:

Input: divisor1 = 3, divisor2 = 5, uniqueCnt1 = 2, uniqueCnt2 = 1 **Output:** 3 **Explanation:** Here arr1 = [1,2], and arr2 = [3] satisfy all conditions. Since the maximum value is 3, we return it.

Example 3:

Input: divisor1 = 2, divisor2 = 4, uniqueCnt1 = 8, uniqueCnt2 = 2 **Output:** 15 **Explanation:** Here, the final possible arrays can be arr1 = [1,3,5,7,9,11,13,15], and arr2 = [2,6]. It can be shown that it is not possible to obtain a lower maximum satisfying all conditions.

Constraints:

* `2 <= divisor1, divisor2 <= 105` * `1 <= uniqueCnt1, uniqueCnt2 < 109` * `2 <= uniqueCnt1 + uniqueCnt2 <= 109`

Code Snippets

C++:

```
class Solution {
public:
int minimizeSet(int divisor1, int divisor2, int uniqueCnt1, int uniqueCnt2) {

}
};
```

Java:

```
class Solution {
public int minimizeSet(int divisor1, int divisor2, int uniqueCnt1, int
uniqueCnt2) {

}
}
```

Python3:

```
class Solution:
def minimizeSet(self, divisor1: int, divisor2: int, uniqueCnt1: int,
uniqueCnt2: int) -> int:
```