Problem 1753: Maximum Score From Removing Stones

Problem Information

Difficulty: Medium
Acceptance Rate: 68.34%
Paid Only: No
Tags: Math, Greedy, Heap (Priority Queue)

Problem Description

You are playing a solitaire game with **three piles** of stones of sizes `a`■■■■■■, `b`,■■■■■■ and `c`■■■■■■ respectively. Each turn you choose two **different non-empty** piles, take one stone from each, and add `1` point to your score. The game stops when there are **fewer than two non-empty** piles (meaning there are no more available moves).

Given three integers `a`■■■■■, `b`,■■■■■ and `c`■■■■■, return _the_ **_maximum_ **_**score** you can get._

Example 1:

Input: a = 2, b = 4, c = 6 **Output:** 6 **Explanation:** The starting state is (2, 4, 6). One optimal set of moves is: - Take from 1st and 3rd piles, state is now (1, 4, 5) - Take from 1st and 3rd piles, state is now (0, 4, 4) - Take from 2nd and 3rd piles, state is now (0, 3, 3) - Take from 2nd and 3rd piles, state is now (0, 2, 2) - Take from 2nd and 3rd piles, state is now (0, 1, 1) - Take from 2nd and 3rd piles, state is now (0, 0, 0) There are fewer than two non-empty piles, so the game ends. Total: 6 points.

Example 2:

Input: a = 4, b = 4, c = 6 **Output:** 7 **Explanation:** The starting state is (4, 4, 6). One optimal set of moves is: - Take from 1st and 2nd piles, state is now (3, 3, 6) - Take from 1st and 3rd piles, state is now (2, 3, 5) - Take from 1st and 3rd piles, state is now (1, 3, 4) - Take from 1st and 3rd piles, state is now (0, 3, 3) - Take from 2nd and 3rd piles, state is now (0, 2, 2) - Take from 2nd and 3rd piles, state is now (0, 1, 1) - Take from 2nd and 3rd piles, state is

now (0, 0, 0) There are fewer than two non-empty piles, so the game ends. Total: 7 points.

Example 3:

Input: a = 1, b = 8, c = 8 **Output:** 8 **Explanation:** One optimal set of moves is to take from the 2nd and 3rd piles for 8 turns until they are empty. After that, there are fewer than two non-empty piles, so the game ends.

Constraints:

* `1 <= a, b, c <= 105`

Code Snippets

C++:

```
class Solution {
public:
int maximumScore(int a, int b, int c) {

}
};
```

Java:

```
class Solution {
public int maximumScore(int a, int b, int c) {

}
}
```

Python3:

```
class Solution:
def maximumScore(self, a: int, b: int, c: int) -> int:
```