Problem 2126: Destroying Asteroids

Problem Information

Difficulty: Medium
Acceptance Rate: 53.11%
Paid Only: No
Tags: Array, Greedy, Sorting

Problem Description

You are given an integer `mass`, which represents the original mass of a planet. You are further given an integer array `asteroids`, where `asteroids[i]` is the mass of the `ith` asteroid.

You can arrange for the planet to collide with the asteroids in **any arbitrary order**. If the mass of the planet is **greater than or equal to** the mass of the asteroid, the asteroid is **destroyed** and the planet **gains** the mass of the asteroid. Otherwise, the planet is destroyed.

Return `true` _if**all** asteroids can be destroyed. Otherwise, return _`false` _._

Example 1:

Input: mass = 10, asteroids = [3,9,19,5,21] **Output:** true **Explanation:** One way to order the asteroids is [9,19,5,3,21]: - The planet collides with the asteroid with a mass of 9. New planet mass: 10 + 9 = 19 - The planet collides with the asteroid with a mass of 19. New planet mass: 19 + 19 = 38 - The planet collides with the asteroid with a mass of 5. New planet mass: 38 + 5 = 43 - The planet collides with the asteroid with a mass of 3. New planet mass: 43 + 3 = 46 - The planet collides with the asteroid with a mass of 21. New planet mass: 46 + 21 = 67 All asteroids are destroyed.

Example 2:

Input: mass = 5, asteroids = [4,9,23,4] **Output:** false **Explanation:** The planet cannot ever gain enough mass to destroy the asteroid with a mass of 23. After the planet destroys the other asteroids, it will have a mass of 5 + 4 + 9 + 4 = 22. This is less than 23, so a collision would not destroy the last asteroid.

Constraints:

* `1 <= mass <= 105` * `1 <= asteroids.length <= 105` * `1 <= asteroids[i] <= 105`

Code Snippets

C++:

```
class Solution {
public:
bool asteroidsDestroyed(int mass, vector<int>& asteroids) {

}
};
```

Java:

```
class Solution {
public boolean asteroidsDestroyed(int mass, int[] asteroids) {

}
}
```

Python3:

```
class Solution:
def asteroidsDestroyed(self, mass: int, asteroids: List[int]) -> bool:
```