Problem 1561: Maximum Number of Coins You Can Get

Problem Information

Difficulty: Medium
Acceptance Rate: 84.64%
Paid Only: No
Tags: Array, Math, Greedy, Sorting, Game Theory

Problem Description

There are `3n` piles of coins of varying size, you and your friends will take piles of coins as follows:

* In each step, you will choose **any** `3` piles of coins (not necessarily consecutive). * Of your choice, Alice will pick the pile with the maximum number of coins. * You will pick the next pile with the maximum number of coins. * Your friend Bob will pick the last pile. * Repeat until there are no more piles of coins.

Given an array of integers `piles` where `piles[i]` is the number of coins in the `ith` pile.

Return the maximum number of coins that you can have.

Example 1:

Input: piles = [2,4,1,2,7,8] **Output:** 9 **Explanation:** Choose the triplet (2, 7, 8), Alice Pick the pile with 8 coins, you the pile with **7** coins and Bob the last one. Choose the triplet (1, 2, 4), Alice Pick the pile with 4 coins, you the pile with **2** coins and Bob the last one. The maximum number of coins which you can have are: 7 + 2 = 9. On the other hand if we choose this arrangement (1, **2** , 8), (2, **4** , 7) you only get 2 + 4 = 6 coins which is not optimal.

Example 2:

Input: piles = [2,4,5] **Output:** 4

Example 3:

Input: piles = [9,8,7,6,5,1,2,3,4] **Output:** 18

Constraints:

* `3 <= piles.length <= 105` * `piles.length % 3 == 0` * `1 <= piles[i] <= 104`

Code Snippets

C++:

```cpp
class Solution {
public:
int maxCoins(vector<int>& piles) {

}
};
```

Java:

```java
class Solution {
public int maxCoins(int[] piles) {

}
}
```

Python3:

```python
class Solution:
def maxCoins(self, piles: List[int]) -> int:
```