**[Find Polygon With the Largest Perimeter](https://leetcode.com/problems/find-polygon-with-the-largest-perimeter/)**

You are given an array of **positive** integers nums of length n.

A **polygon** is a closed plane figure that has at least 3 sides. The **longest side** of a polygon is **smaller** than the sum of its other sides.

Conversely, if you have k (k >= 3) **positive** real numbers a1, a2, a3, ..., ak where a1 <= a2 <= a3 <= ... <= ak **and** a1 + a2 + a3 + ... + ak-1 > ak, then there **always** exists a polygon with k sides whose lengths are a1, a2, a3, ..., ak.

The **perimeter** of a polygon is the sum of lengths of its sides.

Return *the****largest****possible****perimeter****of a****polygon****whose sides can be formed from* nums, *or* -1 *if it is not possible to create a polygon*.

**Example 1:**

**Input:** nums = [5,5,5]

**Output:** 15

**Explanation:** The only possible polygon that can be made from nums has 3 sides: 5, 5, and 5. The perimeter is 5 + 5 + 5 = 15.

**Example 2:**

**Input:** nums = [1,12,1,2,5,50,3]

**Output:** 12

**Explanation:** The polygon with the largest perimeter which can be made from nums has 5 sides: 1, 1, 2, 3, and 5. The perimeter is 1 + 1 + 2 + 3 + 5 = 12.

We cannot have a polygon with either 12 or 50 as the longest side because it is not possible to include 2 or more smaller sides that have a greater sum than either of them.

It can be shown that the largest possible perimeter is 12.

**Example 3:**

**Input:** nums = [5,5,50]

**Output:** -1

**Explanation:** There is no possible way to form a polygon from nums, as a polygon has at least 3 sides and 50 > 5 + 5.

**Constraints:**

* 3 <= n <= 105
* 1 <= nums[i] <= 109

Code :

class Solution {

public:

    long long largestPerimeter(vector<int>& nums) {

        long long sum = 0;

        sort(nums.begin(),nums.end());

        for(auto i : nums) sum += i;

        int n = nums.size();

        for(int i = n - 1; i >= 2; i--){

            sum -= nums[i];

            if(sum > nums[i]){

                return sum + nums[i];

            }

        }

        return -1;

    }

};

Link : <https://leetcode.com/problems/find-polygon-with-the-largest-perimeter/?envType=daily-question&envId=2024-02-15>