**LeetCode 1304: Find N Unique Integers Sum up to Zero**

**🧠 Problem Statement**

**LeetCode 1304 – Find N Unique Integers Sum up to Zero**

Given an integer n, return any array containing n **unique integers** such that they **add up to 0**.

**✨ Intuition**

To create n unique integers that sum to zero:

* Use symmetric pairs like (-x, x) which cancel each other out.
* If n is **even**, we can use n/2 such pairs.
* If n is **odd**, we use (n-1)/2 pairs and include 0 to balance the sum.

This approach guarantees:

* All integers are unique
* The total sum is zero
* Time complexity is O(n)

**✅ C++ Implementation**

#include <vector>

using namespace std;

class Solution {

public:

vector<int> sumZero(int n) {

vector<int> arr;

int k = -(n / 2);

for (; k <= n / 2; k++) {

if (n % 2 == 0 && k == 0) {

continue; // Skip 0 for even n

}

arr.push\_back(k);

}

return arr;

}

};

**🧪 Examples**

Input: n = 5

Output: [-2, -1, 0, 1, 2]

Input: n = 4

Output: [-2, -1, 1, 2]

Input: n = 1

Output: [0]

**📈 Time & Space Complexity**

* **Time**: O(n)
* **Space**: O(n)