Problem 477: Total Hamming Distance

Problem Information

Difficulty: Medium
Acceptance Rate: 54.35%
Paid Only: No
Tags: Array, Math, Bit Manipulation

Problem Description

The [Hamming distance](https://en.wikipedia.org/wiki/Hamming_distance) between two integers is the number of positions at which the corresponding bits are different.

Given an integer array `nums`, return _the sum of**Hamming distances** between all the pairs of the integers in_ `nums`.

Example 1:

Input: nums = [4,14,2] **Output:** 6 **Explanation:** In binary representation, the 4 is 0100, 14 is 1110, and 2 is 0010 (just showing the four bits relevant in this case). The answer will be: HammingDistance(4, 14) + HammingDistance(4, 2) + HammingDistance(14, 2) = 2 + 2 + 2 = 6.

Example 2:

Input: nums = [4,14,4] **Output:** 4

Constraints:

* `1 <= nums.length <= 104` * `0 <= nums[i] <= 109` * The answer for the given input will fit in a **32-bit** integer.

Code Snippets

C++:

```
class Solution {
public:
int totalHammingDistance(vector<int>& nums) {

}
};
```

Java:

```
class Solution {
public int totalHammingDistance(int[] nums) {

}
}
```

Python3:

```
class Solution:
def totalHammingDistance(self, nums: List[int]) -> int:
```