3215. Count Triplets with Even XOR Set Bits II Premium

Medium | Topics | Companies | Hint

Given three integer arrays `a`, `b`, and `c`, return the number of triplets `(a[i], b[j], c[k])`, such that the bitwise `XOR` between the elements of each triplet has an **even** number of set bits.

Example 1:

> **Input:** `a = [1], b = [2], c = [3]`
>
> **Output:** 1
>
> **Explanation:**
>
> The only triplet is `(a[0], b[0], c[0])` and their `XOR` is: `1 XOR 2 XOR 3 = 00₂`.

Example 2:

> **Input:** `a = [1,1], b = [2,3], c = [1,5]`
>
> **Output:** 4
>
> **Explanation:**
>
> Consider these four triplets:
>
> - `(a[0], b[1], c[0])`: `1 XOR 3 XOR 1 = 011₂`
> - `(a[1], b[1], c[0])`: `1 XOR 3 XOR 1 = 011₂`
> - `(a[0], b[0], c[1])`: `1 XOR 2 XOR 5 = 110₂`
> - `(a[1], b[0], c[1])`: `1 XOR 2 XOR 5 = 110₂`

Constraints:

- `1 <= a.length, b.length, c.length <= 10^5`
- `0 <= a[i], b[i], c[i] <= 10^9`

Seen this question in a real interview before? 1/5

Yes No

Accepted **475** | Submissions **651** | Acceptance Rate **73.0%**

Topics

Array Bit Manipulation

Companies

0 - 6 months

Amazon 2

Hint 1

If `x` and `y` both have an even number of set bits, how many set bits do their XOR have?

Hint 2

If exactly one of `x` and `y` has an even number of set bits, how many set bits do their XOR have?

Hint 3

Conclude that if the XOR of three elements would have an even number of set bits, an even number of them (0 or 2) should have an odd number of set bits!

Hint 4

For each array count the number of elements that have even set bits and also count the ones that have odd set bits.

Discussion (1)