6127. Number of Excellent Pairs

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User Accepted:	0
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Total Accepted:	0
Total Submissions:	1
Difficulty:	Hard

You are given a **0-indexed** positive integer array `nums` and a positive integer `k`.

A pair of numbers `(num1, num2)` is called **excellent** if the following conditions are satisfied:

- **Both** the numbers `num1` and `num2` exist in the array `nums`.
- The sum of the number of set bits in `num1 OR num2` and `num1 AND num2` is greater than or equal to `k`, where `OR` is the bitwise **OR** operation and `AND` is the bitwise **AND** operation.

Return *the number of **distinct** excellent pairs*.

Two pairs `(a, b)` and `(c, d)` are considered distinct if either `a != c` or `b != d`. For example, `(1, 2)` and `(2, 1)` are distinct.

Note that a pair `(num1, num2)` such that `num1 == num2` can also be excellent if you have at least **one** occurrence of `num1` in the array.

Example 1:

```
Input: nums = [1,2,3,1], k = 3
Output: 5
Explanation: The excellent pairs are the following:
- (3, 3). (3 AND 3) and (3 OR 3) are both equal to (11) in binary. The total number of set bits is 2 + 2 = 4, which is greater
- (2, 3) and (3, 2). (2 AND 3) is equal to (10) in binary, and (2 OR 3) is equal to (11) in binary. The total number of set bit
- (1, 3) and (3, 1). (1 AND 3) is equal to (01) in binary, and (1 OR 3) is equal to (11) in binary. The total number of set bit
So the number of excellent pairs is 5.
```

Example 2:

```
Input: nums = [5,1,1], k = 10
Output: 0
Explanation: There are no excellent pairs for this array.
```

Constraints:

- `1 <= nums.length <= 10^5`
- `1 <= nums[i] <= 10^9`
- `1 <= k <= 60`

JavaScript

```javascript
const bitCount = (n) => { n = n - ((n >> 1) & 0x55555555); n = (n & 0x33333333) + ((n >> 2) & 0x33333333); return ((n +
(n >> 4) & 0xF0F0F0F) * 0x1010101) >> 24; };

const countExcellentPairs = (a, k) => {
    let u = [...new Set(a)], f = Array(30).fill(0), res = 0;
    for (const x of u) {
        let cnt = bitCount(x);
        f[cnt]++;
    }
    for (let i = 0; i < 30; i++) {
        for (let j = 0; j < 30; j++) {
            if (i + j >= k) res += f[i] * f[j];
        }
    }
    return res;
};
```

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