Problem J
Counting Pairs

Consider the binary operator $\oplus_b(x, y)$ that is defined for $b \in \{2, 4\}$ as follows. First, convert both x and y into base b. Then, for each corresponding digit pair, the resulting digit can be calculated by adding the digit pair modulo b. Finally, convert the result back to base ten. Notice that $\oplus_2$ is the bitwise XOR operator.

For instance, $\oplus_4(18, 7) = 21$ can be calculated as follows. The base four representations of 18 and 7 are $(102)_4$ and $(013)_4$, respectively. After the addition for each digit pair, the result is $(111)_4$, or 21 in base ten.

You are given a list of N integers, $A_1, A_2, \ldots, A_N$.

Determine the number of pairs (i, j) such that $1 \leq i < j \leq N$ and $\oplus_2(A_i, A_j) = \oplus_4(A_i, A_j)$.

Input

The first line consists of an integer N ($2 \leq N \leq 200\,000$).

The next line consists of N integers A_i ($0 \leq A_i \leq 10^{12}$).

Output

Output a single integer representing the number of pairs (i, j) such that $1 \leq i < j \leq N$ and $\oplus_2(A_i, A_j) = \oplus_4(A_i, A_j)$.

Sample Input #1

```
5
2 2 0 1 3
```

Sample Output #1

```
9
```

Explanation for the sample input/output #1

The only pair that does not satisfy the requirements is $(4, 5)$, because $\oplus_2(1, 3) = 2$ and $\oplus_4(1, 3) = 0$.

Sample Input #2

```
2
17 13
```

Sample Output #2

```
0
```

Sample Input #3

```
10
13 7 29 4 18 0 4 21 12 20
```

Sample Output #3

```
14
```

Sample Input #4

```
10
0 0 0 0 0 0 0 0 0 0
```

Sample Output #4

```
45
```