Algorithm

1/p loop through 31 bits

2/p for each bit :
    Count C1 = no. with bit set
    Count C2 = no. with bit unset
                (N - C1)

3/p add contribution
    2 × C1 × C2

4.4 Take mod

Code

```
int countbit ( int n, vector <int> &A)
    const int mod = 1000000002
    long long ans=0
    for (int b=0; b<31; b++)
        long long ones=0;
        for (int x : A)
            ones + ( x>>b ) & 1;
        ans = ans + ans × ( N -ones) <<1) %
        return ans;
    }
int main() {
        int N;
        cin >> N;
        vector <int> arr(N);
        for ( auto it : N)
            cin>> it;
        cout << countbit ( N, an)
    }
```