Factorial Length Sum

The *factorial length* of a number is defined here as the sum of prime powers in the number's factorization; for example:
$factorialLength(6) = 2$. $3 = 2^1 \times 3^1$. Summing the powers, we get $1 + 1 = 2$.
$factorialLength(12) = 3$. $4 = 2^2 \times 3^1$. Summing the powers, we get $2 + 1 = 3$.

Given an array, A, of N integers (where $A = \{a_0, a_1, \ldots, a_{n-2}, a_{N-1}\}$), we define a *super-subsequence* (S) of a subsequence (A') to be the sequence of factorials of each number in A'. For instance, if $A' = \{a_{j+0}, a_{j+1}, \ldots, a_{j+k-1}\}$ denotes a subsequence of length k (where j is the j^{th} index of A and $0 \leq j+k \leq N-1$), then the corresponding super-subsequence would be $S = \{(a_{j+0})!, (a_{j+1})!, \ldots, (a_{j+k-1})!\}$. Recall that **!** denotes Factorial.

The *pleasing value* of a super-subsequence (S) is defined here as the sum of the factorial lengths of all the numbers in S.

Find and print the sum of factorial lengths for all super-subsequences with an *even* pleasing value.

Input Format

The first line contains an integer, N, denoting the size of array A.
The second line contains N space-separated integers describing the ordered elements in A.

Constraints
$1 \leq N \leq 16$
$1 \leq a_i \leq 10^6$

Output Format

Print the sum of factorial lengths for all super-subsequences having an *even* pleasing value.

Sample Input

```
2
2 4
```

Sample Output

```
4
```

Explanation

Array $A = \{2,4\}$ has three non-empty subsequences: $A'_1 = \{2\}$, $A'_2 = \{4\}$, and $A'_3 = \{2, 4\}$.
Their respective *super-subsequences* are: $S_1 = \{2!\}$, $S_2 = \{4!\}$, and $S_3 = \{2!,4!\}$.
Their respective *pleasing values* are: $P_1(\{2!\}) = 1$, $P_2(\{4!\}) = 4$, and $P_3(\{2!,4!\}) = factorialLength(2!) + factorialLength(4!) = 1 + 4 = 5$.
The only subset having an *even* pleasing value is A'_2, so we print its factorial length: 4.