Sequence Function

We define a sequence {x}: $\{x\}=\{x_0, x_1, \dots, x_{n-1}\}$ where x_i is a interger.

We have a function f: {x}->{x’} where {x} is a finite sequence.

After we have a finite sequence {x}, we can get f({x}) follow these rules :

(1). Remove all 0 in x : a 0 b 0 c d 0 e f 0 g => a b c d e f g

(2). Turn 1 into 100 and -1 into -100 : a 1 b 1 -1 c d e f g => a 100 b 100 -100 c d e f g

(3). Add all 2^k (k>1) at the end of the sequence : a 2 b 8 c d e 1024 f g => a 2 b 8 c d e 1024 f g 2 8 1024

(4). Add any positive odd prime x at the end of the sequence x-1 times: a 3 b c 7 d e f 5 g => a 3 b c 7 d e f 5 g 3 3 7 7 7 7 7 7 5 5 5 5

(5). For any positive composite number (not 2^k, k>1), we just keep it once: a 6 b 6 c d 6 e 4 4 f g => a 6 b c d e 4 4 f g

(6). Keep any t (t<-1) in the sequence.

For a example:

{x}={-5 1 0 2 9 16 7 5 3 2 9 9 -1}

f({x})={-5 100 2 9 16 7 5 3 2 -100 2 2 16 7 7 7 7 7 7 5 5 5 5 3 3}

We define g({x}) is the sum of all the element in sequence x.

We define h({x}) = g(f({x}))-g({x}).

A consecutive sequence of x is a sequence $\{x_i, x_{i+1}, x_{i+2}, \dots, x_j\}$ where $0<=i<=j<n$.

Now I will give you a sequence {x} .

I want to ask you the maximal h({y}) where {y} is a consecutive sequence of {x}.

Input

One line consists one interger N, the length of {x}. ($N<=10^5$, $|x_i|<=10000$)

Next N lines, each line consists one interger.

Output

The maximal h({y}) where {y} is a consecutive sequence of {x}. (|h({y})|<=2^63-1)

Example

Input:

5

1

2

6

6

3

Output:

101