C. Find Maximum

Valera has array a, consisting of n integers $a_0, a_1, ..., a_{n-1}$, and function $f(x)$, taking an integer from 0 to $2^n - 1$ as its single argument. Value $f(x)$ is calculated by formula , where value $bit(i)$ equals one if the binary representation of number x contains a 1 on the i-th position, and zero otherwise.

For example, if $n = 4$ and $x = 11$ ($11 = 2^0 + 2^1 + 2^3$), then $f(x) = a_0 + a_1 + a_3$.

Help Valera find the maximum of function $f(x)$ among all x, for which an inequality holds: $0 \le x \le m$.

Input

The first line contains integer n ($1 \le n \le 10^5$) — the number of array elements. The next line contains n space-separated integers $a_0, a_1, ..., a_{n-1}$ ($0 \le a_i \le 10^4$) — elements of array a.

The third line contains a sequence of digits zero and one without spaces $s_0 s_1 ... s_{n-1}$ — the binary representation of number m. Number m equals .

Output

Print a single integer — the maximum value of function $f(x)$ for all .

Examples

input
```
2
3 8
10
```
output
```
3
```

input
```
5
17 0 10 2 1
11010
```
output
```
27
```

Note

In the first test case $m = 2^0 = 1$, $f(0) = 0$, $f(1) = a_0 = 3$.

In the second sample $m = 2^0 + 2^1 + 2^3 = 11$, the maximum value of function equals $f(5) = a_0 + a_2 = 17 + 10 = 27$.