Testing Round #14 (Unrated)

A. The Way to Home

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

A frog lives on the axis Ox and needs to reach home which is in the point n. She starts from the point 1. The frog can jump to the right at a distance not more than d. So, after she jumped from the point x she can reach the point $x + a$, where a is an integer from 1 to d.

For each point from 1 to n is known if there is a lily flower in it. The frog can jump only in points with a lilies. Guaranteed that there are lilies in the points 1 and n.

Determine the minimal number of jumps that the frog needs to reach home which is in the point n from the point 1. Consider that initially the frog is in the point 1. If the frog can not reach home, print `-1`.

Input

The first line contains two integers n and d $(2 \le n \le 100, 1 \le d \le n - 1)$ — the point, which the frog wants to reach, and the maximal length of the frog jump.

The second line contains a string s of length n, consisting of zeros and ones. If a character of the string s equals to zero, then in the corresponding point there is no lily flower. In the other case, in the corresponding point there is a lily flower. Guaranteed that the first and the last characters of the string s equal to one.

Output

If the frog can not reach the home, print `-1`.

In the other case, print the minimal number of jumps that the frog needs to reach the home which is in the point n from the point 1.

Examples

input

```
8 4
10010101
```

output

```
2
```

input

```
4 2
1001
```

output

```
-1
```

input

```
8 4
11100101
```

output

```
3
```

input

```
12 3
101111100101
```

output

```
4
```

Note

In the first example the from can reach home in two jumps: the first jump from the point 1 to the point 4 (the length of the jump is three), and the second jump from the point 4 to the point 8 (the length of the jump is four).

In the second example the frog can not reach home, because to make it she need to jump on a distance three, but the maximum length of her jump equals to two.

B. Door Frames

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Petya has equal wooden bars of length n. He wants to make a frame for *two* equal doors. Each frame has two vertical (left and right) sides of length a and one top side of length b. A solid (i.e. continuous without breaks) piece of bar is needed for each side.

Determine a minimal number of wooden bars which are needed to make the frames for two doors. Petya can cut the wooden bars into any parts, but each side of each door should be a solid piece of a wooden bar (or a whole wooden bar).

Input

The first line contains a single integer n $(1 \leq n \leq 1\ 000)$ — the length of each wooden bar.

The second line contains a single integer a $(1 \leq a \leq n)$ — the length of the vertical (left and right) sides of a door frame.

The third line contains a single integer b $(1 \leq b \leq n)$ — the length of the upper side of a door frame.

Output

Print the minimal number of wooden bars with length n which are needed to make the frames for two doors.

Examples

input

```
8
1
2
```

output

```
1
```

input

```
5
3
4
```

output

```
6
```

input

```
6
4
2
```

output

```
4
```

input

```
20
5
6
```

output

```
2
```

Note

In the first example one wooden bar is enough, since the total length of all six sides of the frames for two doors is 8.

In the second example 6 wooden bars is enough, because for each side of the frames the new wooden bar is needed.

C. Minimum Sum

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Petya has n positive integers $a_1, a_2, \ldots, a_n$.

His friend Vasya decided to joke and replaced all digits in Petya's numbers with a letters. He used the lowercase letters of the Latin alphabet from 'a' to 'j' and replaced all digits 0 with one letter, all digits 1 with another letter and so on. For any two different digits Vasya used distinct letters from 'a' to 'j'.

Your task is to restore Petya's numbers. The restored numbers should be **positive integers** without leading zeros. Since there can be multiple ways to do it, determine the **minimum** possible sum of all Petya's numbers after the restoration. It is guaranteed that before Vasya's joke all Petya's numbers did not have leading zeros.

Input

The first line contains a single integer n $(1 \le n \le 1\ 000)$ — the number of Petya's numbers.

Each of the following lines contains non-empty string s_i consisting of lowercase Latin letters from 'a' to 'j' — the Petya's numbers after Vasya's joke. The length of each string does not exceed six characters.

Output

Determine the **minimum** sum of all Petya's numbers after the restoration. The restored numbers should be **positive integers** without leading zeros. It is guaranteed that the correct restore (without leading zeros) exists for all given tests.

Examples

input

```
3
ab
de
aj
```

output

```
47
```

input

```
5
abcdef
ghij
bdef
accbd
g
```

output

```
136542
```

input

```
3
aa
jj
aa
```

output

```
44
```

Note

In the first example, you need to replace the letter 'a' with the digit 1, the letter 'b' with the digit 0, the letter 'd' with the digit 2, the letter 'e' with the digit 3, and the letter 'j' with the digit 4. So after the restoration numbers will look like $[10, 23, 14]$. The sum of them is equal to 47, which is the minimum possible sum of the numbers after the correct restoration.

In the second example the numbers after the restoration can look like: $[120468, 3579, 2468, 10024, 3]$.

In the second example the numbers after the restoration can look like: $[11, 22, 11]$.