IOI Training Camp 2013 – Online Test 2, 20–21 April, 2013

Sum Thing

Given a string of N digits, find the minimum number of plus signs that need to be inserted into the string so that the resulting expression equals some target number T. After all plus signs are inserted, the expression is evaluated as usual.

For example, consider the string "`12`" (quotes added for clarity). With zero plus signs, we can achieve the number 12. If we insert one plus sign into the string, we get "`1+2`", which evaluates to 3. So, in that case, given "`12`", a minimum of one plus sign is required to get the number 3. As another example, consider "`303`" and a target sum of 6. The best strategy is not "`3+0+3`", but "`3+03`". You can do this because leading zeros do not change the result.

Input format

The input is in three lines.

- Line 1 contains an integer N.
- Line 2 contains a string of N digits.
- Line 3 contains a single non-negative integer T.

Output format

A single line containing a single integer, the minimum number of plus signs required to create an expression from the string of N digits that evaluates to T. If this is not possible, print -1.

Test data

In all testcases, $T \leq 100000$.

- Subtask 1 (30 marks) : $1 \leq N \leq 10$.
- Subtask 2 (70 marks) : $1 \leq N \leq 50$.

Sample input 1

```
4
1110
3
```

Sample output 1

```
3
```

Sample input 2

```
3
303
6
```

Sample output 2

```
1
```

Limits

- *Memory limit* : 128 MB
- *Time limit* : 4s