Task 4: LoveLetter

Ben has a crush on *REDACTED* and wants to write a love letter to her. In order to make sure the message is kept secret, he encoded the message into a string of numbers using the following mapping:

Character	Number
L	1
A	2
T	3
Q	4
O	5
R	6
F	7
D	8
S	9
K	10
Z	11
G	12
P	13
M	14

Character	Number
H	15
B	16
X	17
Y	18
W	19
C	20
U	21
I	22
V	23
J	24
E	25
N	26
_	27
.	28

To decode the encoded message, all digits need to be grouped then mapped back into the respective characters using the reverse of the mapping above. However, you noticed that this encoding technique is a bad idea as there are multiple possible ways of decoding, which may result in Ben's crush miss interpreting the message. For example, `11102` can be mapped as:

- `LLKA` with grouping `(1 1 10 2)`

- `ZKA` with grouping `(11 10 2)`

Note that grouping `(11 1 02)` is invalid as `02` cannot be mapped to `A` since `06` is different from `6`.

In order to convince Ben this is a bad idea, you are tasked with writing a program to calculate the total number of ways a given encoded message can be decoded.

Input format

Your program must read from standard input.

The first line contains a single integer, N, representing the length of the encoded message. The second line is the encoded message with N number of digits, each from 0-9.

Output format

Your program must print to standard output.

Your program should print a single integer representing the total number of ways to decode the message. It is guaranteed that the number will fit into a 32-bit integer.

Constraints

The maximum execution time on each instance is 1.0s. Your program will be tested on sets of input instances that satisfy the following limits:

- $1 \leq N \leq 10^6$

Subtask	Marks	Additional Limits
1	30	$1 \leq N \leq 10^3$
2	20	Encoded message does not contain the digit 0 and 1
3	50	No further restrictions

Sample Testcase 1

This testcase is valid for all subtasks.

Input	Output
3 928	2

Explanation

The only possible mapping is:

- `S.` with grouping `(9 28)`
- `SAD` with grouping `(9 2 8)`

Sample Testcase 2

This testcase is valid for subtasks 1 and 3.

Input	Output
4 2301	0

Explanation

If we group `(23 01)`, `01` is invalid.
If we group `(23 0 1)`, `0` is invalid.
If we group `(2 30 1)`, `30` is invalid.

Sample Testcase 3

This testcase is valid for subtasks 1 and 3.

Input	Output
6 152325	8

Explanation

The possible mappings are:

- `HVE` with grouping `(15 23 25)`

- `LOVE` with grouping `(1 5 23 25)`
- `HATE` with grouping `(15 2 3 25)`
- `HVAO` with grouping `(15 23 2 5)`
- `HATAO` with grouping `(15 2 3 2 5)`
- `LOVAO` with grouping `(1 5 23 2 5)`
- `LOATE` with grouping `(1 5 2 3 25)`
- `LOATAO` with grouping `(1 5 2 3 2 5)`