Marks Sum

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

This is a runtwice problem. Your solution will be executed twice.

Ivan studies very badly. During his studies, he got only marks 1 and 2. To present his results to his parents, he decided to use a sum of marks (in this case, they won't be able to recognize his bad marks).

Ivan's marks can be represented by the string s, consisting of characters 1 and 2. He started downloading it, but unfortunately, the connection to the internet was lost and he downloaded only some prefix of the string $s[1..i]$ (for some $1 \le i < |s|$, so this prefix is not empty and is not equal to the full string). After reconnection, the remaining suffix of the string will be downloaded.

Your solution will be executed twice:

1. During the first execution, you will be given the downloaded prefix: $s[1..i]$.

   You should give some number $0 \le d < \min(i+1, 2000)$ and $0 \le info < 2000$.

2. During the second execution, you will be given the number $info$ and the remaining suffix of the string with d last symbols of the downloaded prefix: $s[(i+1-d)..|s|]$.

   You should give the sum of all symbols in s.

Input

The first line contains a single integer $type$ ($1 \le type \le 2$). In the first execution, $type = 1$, and in the second execution, $type = 2$.

The input consists of multiple independent test cases. The second line contains a single integer t ($1 \le t \le 1000$) — the number of test cases. The description of the test cases follows.

- If $type = 1$, each of the next t lines contains a single string, consisting of characters 1 and 2 — downloaded prefix $s[1..i]$.
- If $type = 2$, each of the next t lines contains an integer $info$ ($0 \le info < 2000$), that your solution was given in the first execution for this test case, and a string, consisting of characters 1 and 2 — downloaded suffix $s[(i+1-d)..|s|]$ for d, that your solution was given in the first execution for this test case.

It is guaranteed, that all strings s and numbers i for them are fixed in advance.

It is guaranteed, that the sum of $|s|$ for all test cases does not exceed 10^6.

Note, that test cases can be reordered for the second execution.

Output

- If $type = 1$, for each test case, your solution should print two integers $0 \le d < \min(i+1, 2000)$, $0 \le info < 2000$. They will be used for the second execution on this test case.
- If $type = 2$, for each test case, your solution should print a single integer — the sum in the string s.

Example

Note, that given outputs of the solution in the first execution are given as example and may be different for your solution.

First execution.

standard input	standard output
1 3 1 222 1212111122	0 42 1 11 4 22

Second execution.

standard input	standard output
2 3 11 22211 22 11222221 42 2	12 21 3

Note

In the first test, there are 3 test cases and strings s for them are:

12
2222211
12121111222221

Note, that for the second execution, test cases were reordered.