Task: SUM
Sum of digits

Olimpiada Informatyczna

XXIV OI, Stage II, Day one. Source file `sum.*` Available memory: 128 MB. *15.02.2017*

Write a program that will determine the k-th smallest element in the set of positive integers that are both divisible by m and whose sum of digits equals s (provided that such a number exists and is not too large), for several values of k.

Input

In the first line of the standard input, there are three positive integers s, m, and q, which specify the set of integers under consideration and the number of queries. The following q lines specify the queries, one per line: the i-th line contains a single positive integer k_i.

Output

Exactly q lines should be printed to the standard output, containing the answers to successive queries, i.e., the i-th line should contain the k_i-th smallest positive integer divisible by m and with sum of digits s or the single word `NIE` (Polish for *no*), if such number does not exist or has more than 200 digits.

Example

For the input data:	the correct result is:

`5 2 3`
`2`
`4`
`1000000000000000000`
	`32`
	`104`
	`NIE`

Explanation for the example: Successive integers with sum of digits equal 5 are: 5, 14, 23, 32, 41, 50, 104, 113, 122, ... The subsequence of even numbers among those is: 14, 32, 50, 104, 122, ... The 10^{18}-th among those has more than 200 digits.

Sample grading tests:

`1ocen:` $s = 10$, $m = 1$, $q = 1$, $k_1 = 5$, answer: `55`;

`2ocen:` $s = 200$, $m = 200$, $q = 1$, $k_1 = 1$, answer: `399999999999999999999800`;

`3ocen:` $s = 2$, $m = 1$, $q = 1$, $k_1 = 10^9$, answer: `NIE`;

`4ocen:` $s = 5$, $m = 2$, $q = 200$, $k_i = i$;

`5ocen:` $s = 1$, $m = 7$, $q = 1$, $k_1 = 10^{18}$, answer: `NIE`.

Grading

The set of tests consists of the following subsets. Within each subset, there may be several test groups.

All the subsets satisfy the following conditions: $1 \le s \le 200$, $1 \le m \le 200$, $1 \le q \le 10\,000$, $1 \le k_i \le 10^{18}$.

Subset	Property	Score
1	$q \le 20$, answer does not exceed $1\,000\,000$	5
2	$s = 1$	5
3	$k_i = 1$	10
4	$q = 1$, $m = 1$, $k_i \le 1000$	15
5	$q = 1$, $m = 1$, $k_i \le 1\,000\,000$	15
6	$q = 1$, $m = 1$, $k_i \le 10^9$	15
7	$m = 1$	15
8	no further restrictions	20