Problem Digit Sum

Little Digit is, for whatever reason, interested in the sum of digits of numbers. For any non-negative integer x, let DigitSum(x) the sum of the digits of x. For example

$$\text{DigitSum}(123) = 1 + 2 + 3 = 6,$$
$$\text{DigitSum}(998877) = 9 + 9 + 8 + 8 + 7 + 7 = 48,$$
$$\text{DigitSum}(0) = 0.$$

Her friend, Little Square, gave her an array $A_1, \ldots, A_N$ of N non-negative integers, as well as another array $X_1, \ldots, X_Q$ of Q non-negative integers. For every $i = 1, \ldots, Q$, help her find the sum

$$\text{DigitSum}(X_i + A_1) + \cdots + \text{DigitSum}(X_i + A_N).$$

Input Data

The first line contains N and Q. The next $N + Q$ lines contain the numbers $A_1, \ldots, A_N, X_1, \ldots, X_Q$, in that order, each on one line.

Output

Output Q lines. Line i of the output should contain the sum

$$\text{DigitSum}(X_i + A_1) + \cdots + \text{DigitSum}(X_i + A_N).$$

Restrictions

- $1 \leq N, Q \leq 5000$
- $1 \leq A_i, X_i \leq 10^{2000}$

#	Points	Constraints
1	19	$X_i, A_i \leq 10^9$
2	18	X_i, A_i consist only of digits $0, 1, 2, 3, 4$
3	15	$N, Q \leq 300$ and $X_i, A_i \leq 10^{300}$
4	24	$N, Q \leq 1000$
5	24	No other restrictions

Examples

Input data	Output data
5 3 10 8 72 13 26 18 31 15	39 41 42

Explanations

The input is

$$A_1 = 10,$$
$$A_2 = 8,$$
$$A_3 = 72,$$
$$A_4 = 13,$$
$$A_5 = 26$$

and

$$X_1 = 18,$$
$$X_2 = 31,$$
$$X_3 = 15.$$

We must compute 3 sums.

The first sum is

$$\begin{aligned}
&\text{DigitSum}(X_1 + A_1) + \cdots + \text{DigitSum}(X_1 + A_5) \\
&\quad = \text{DigitSum}(18 + 10) + \text{DigitSum}(18 + 8) + \text{DigitSum}(18 + 72) + \text{DigitSum}(18 + 13) \\
&\qquad\qquad + \text{DigitSum}(18 + 26) \\
&\quad = \text{DigitSum}(28) + \text{DigitSum}(26) + \text{DigitSum}(90) + \text{DigitSum}(31) + \text{DigitSum}(44) \\
&\qquad = 2 + 8 + 2 + 6 + 9 + 0 + 3 + 1 + 4 + 4 = 39.
\end{aligned}$$

The second sum is

$$\begin{aligned}
&\text{DigitSum}(X_2 + A_1) + \cdots + \text{DigitSum}(X_2 + A_5) \\
&\quad = \text{DigitSum}(31 + 10) + \text{DigitSum}(31 + 8) + \text{DigitSum}(31 + 72) + \text{DigitSum}(31 + 13) \\
&\qquad\qquad + \text{DigitSum}(31 + 26) \\
&\quad = \text{DigitSum}(41) + \text{DigitSum}(39) + \text{DigitSum}(103) + \text{DigitSum}(44) + \text{DigitSum}(57) \\
&\qquad = 4 + 1 + 3 + 9 + 1 + 0 + 3 + 4 + 4 + 5 + 7 = 41.
\end{aligned}$$

The third sum is

$$\begin{aligned}
&\text{DigitSum}(X_3 + A_1) + \cdots + \text{DigitSum}(X_3 + A_5) \\
&\quad = \text{DigitSum}(15 + 10) + \text{DigitSum}(15 + 8) + \text{DigitSum}(15 + 72) + \text{DigitSum}(15 + 13) \\
&\qquad\qquad + \text{DigitSum}(15 + 26) \\
&\quad = \text{DigitSum}(25) + \text{DigitSum}(23) + \text{DigitSum}(87) + \text{DigitSum}(28) + \text{DigitSum}(41) \\
&\qquad = 2 + 5 + 2 + 3 + 8 + 7 + 2 + 8 + 4 + 1 = 42.
\end{aligned}$$