

PROBLEM DIGIT SUM

LITTLE DIGIT is, for whatever reason, interested in the sum of digits of numbers. For any non-negative integer x , let $\text{DigitSum}(x)$ the sum of the digits of x . For example

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

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

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

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

■ **OUTPUT** Output Q lines. Line i of the output should contain the sum $\text{DigitSum}(X_i + A_1) + \dots + \text{DigitSum}(X_i + A_N)$.

■ **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	39
10	41
8	42
72	
13	
26	
18	
31	
15	

■ **EXPLANATIONS** The input is

$$\begin{aligned}A_1 &= 10, \\ A_2 &= 8, \\ A_3 &= 72, \\ A_4 &= 13, \\ A_5 &= 26\end{aligned}$$

and

$$X_1 = 18,$$

$$X_2 = 31,$$

$$X_3 = 15.$$

We must compute 3 sums.

The first sum is

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

The second sum is

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

The third sum is

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