

Problem L

Addition

Time Limit: 1 second

Memory Limit: 512 megabytes

Long is a 6 year-old boy and he is learning addition in a multi-digit column adding way. He usually performs an addition of two integers like this:

$$\begin{array}{r} 321 \\ + 456 \\ \hline 777 \end{array}$$

Sometimes, Long performs addition incorrectly and now it is the time for you to help him before he submits his homework to his teacher. Since Long has already written the addition to his notebook, you can only erase some columns in his addition to make it correct. For example, in the following addition, you can obtain a correct addition by erasing the first and the fourth columns.

$$\begin{array}{r} 71212 \\ + 12348 \\ \hline 93650 \end{array} \rightarrow \begin{array}{r} 122 \\ + 238 \\ \hline 360 \end{array}$$

Your task is to find the minimum number of columns needed to be erased such that the remaining columns form a correct addition.

Input

There are multiple test cases in the input.

Each test case starts with a line containing the single integer n , the number of digit columns in the addition ($1 \leq n \leq 1000$).

Each of the next 3 lines contains a string of n digits. The number on the third line is presenting the sum (*not necessarily correct*) of the numbers in the first and second lines. The input terminates with a line containing "0" which should not be processed.

Output

For each test case, print a single line containing the minimum number of columns needed to be erased.

Sample Input

Sample Output

3	0
321	2
456	2
777	1
5	
71212	
12348	
93650	
2	
24	
32	
32	

5 12299 12299 25598 0	
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