P0011. Distance of Hamming   P95206_en

The *distance of Hamming* between two natural numbers is defined as the number of positions in these numbers that have different digits. For instance, the distance of Hamming of 70075 and 774 is 3:

$$\underline{7} \; 0 \; \underline{0} \; 7 \; \underline{5}$$
$$\underline{} \; \; \underline{7} \; 7 \; \underline{4} \quad \Rightarrow \quad \text{there are 3 differences}$$

Your task is to write a program that reads pairs of natural numbers and prints their Hamming distance and the sum of the digits which are in positions with different digits. In the instance, the sum is $(7 + 0) + (0 + 7) + (5 + 4) = 23$.

Your program must implement and use the procedure

    void *calculates* (**int** *a*, **int** *b*, **int**& *dist*, **int**& *sum*);

that, given two natural numbers |a| and |b|, stores at the output parameter |dist| their Hamming distance, and stores at the output parameter |sum| the sum of the digits which are in positions with different digits.

Input

The input is a sequence of pairs of natural numbers.

Output

For each pair of the input, print its Hamming distance and the sum of the digits which are in positions with different digits in another line.

Sample input 1

```
70075 774
774 70075
0 99999
100000 0
0 0
1234567 2345678
```

Sample output 1

```
3 23
3 23
5 45
1 1
0 0
7 63
```

Observation

Remember to implement |calculates()| recursively. This procedure can not contain loops nor calls to other procedures.

Problem information

Author: Professorat de P1
Translator: Carlos Molina

Generation: 2026-01-25T12:07:35.609Z