C++ Fundamentals – Retake Exam (15 May 2021)

3. Diff Checker

*Software developers often need to compare text and find differences between one string and another – source control, checking test results, and even automating error correction. So, having a tool that indicates the differences between two strings – often called a **diff tool** – is very useful for these situations.*

Your task is to write a program, which – given two lines of text of the same length containing English letters, digits, and punctuation – prints a **diff line** that indicates the **differences between the two input lines**. The program should also print the **number of differences**.

The diff line should have the same length as the input lines. For each symbol at a position **`i`** of the diff line:

- If both input lines have the same character at position **`i`**, print that character.
- If both input lines have the same English letter (**`a-z`** or **`A-Z`**) at position **`i`**, but one has it as uppercase and the other has it as a lowercase, print the uppercase letter (do not consider this as a difference).
- If the character is at position **`i`** is different between the two lines (i.e. none of the above is true), print the character "**`!`**" and **count** a difference.

Input

The first line of the standard input will contain **a single positive integer number** – the number of symbols in each of the following two lines.

The next two lines on the standard input contain **punctuation**, **digits**, **and English letters (no spaces)**, each line with no more than **`150`** characters.

Output

On the first line print the **diff** between the two input lines.

On the second print the number of differences between the two input lines.

Restrictions

Each line will contain no more than **`150`** characters.

The total running time of your program should be no more than **`0.1s`**

The total memory allowed for use by your program is **16MB**

Example I/O

Input	Output	Comments
10 some-text1 soM3_Teht1	soM!!Te!t1 3	10 is the length of the strings we should check. "some-text1" and "soM3_Teht1" are the input strings. The green characters have no difference. The yellow characters are the same letter but in the second string the letters are Capital. The red characters have differences.

		In the output string we do not change the characters with no differences, we write the Capital letters for the characters which are the same letter but different size, and finally we change the characters with differences with “!”.
9 some-/ex} $eM3M/eX}	!!M!!/eX} 4	