

# Task: DNA

## DNA

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UFAM Workshop, contest #5. Source file dna.\* Available memory: 128 MB.

The genetic material of Recurse Uncomplicated consists of one DNA string which has an even number of  $n$  purines. There are four of such purines, we will denote them by letters A, C, G and T. Professor Bajthony discovered a relationship between DNA of Recurse and DNA of its parents. In the DNA of Recurse there are exactly  $n/2$  purines which came from DNA of its father and exactly  $n/2$  purines which came from DNA of its mother. Moreover, these purines appear at the same locations in parent's DNA and in offspring's DNA. On the following picture purines from respective parents are underlined.

mother	<u>ATGGCA</u>
father	<u>CTTCAT</u>
offspring	ATGCAA

Professor observed that despite of big number of possibilities in which Recurse's DNA can arise, the offspring of a given pair of parents have always the same DNA. Moreover, the professor hypothesize that the resulting DNA string is lexicographically smallest possibility. Your task is to write a program which will help in verification of this hypothesis.

### Input

In the first line of the input there is one even integer  $n$  ( $2 \leq n \leq 1\,000\,000$ ), specifying the length of DNA string. Each of the next two lines consists of one string of length  $n$  with letters A, C, G and T. These are descriptions of DNA of pair of Recurses.

### Output

In the only line of output you should write a  $n$ -letter string denoting the lexicographically smallest DNA string which can arise from DNA of two Recurses from the input.

### Example

For the input data:

```
6
ATGGCA
CTTCAT
```

the correct result is:

```
ATGCAA
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