

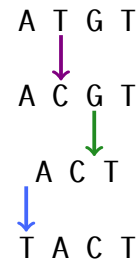
5.2.3 Edit Distance

Edit Distance Problem

Compute the edit distance between two strings.

Input: Two strings.

Output: The minimum number of single-symbol insertions, deletions, and substitutions to transform one string into the other one.



The Edit Distance Problem has many applications in computational biology, natural language processing, spell checking, and many other areas. For example, biologists often compute edit distances when they search for disease-causing mutations.

The edit distance between two strings is defined as the minimum number of single-symbol **insertions**, **deletions**, and **substitutions** to transform one string into the other one.

Input format. Two strings consisting of lower case Latin letters, each on a separate line.

Output format. The edit distance between them.

Constraints. The length of both strings is at least 1 and at most 100.

Sample 1.

Input:

```
short
ports
```

Output:

```
3
```

The second string can be obtained from the first one by deleting s, substituting h for p, and inserting s. This can be compactly visualized by the following *alignment*.

s	h	o	r	t	—
—	p	o	r	t	s

Sample 2.

Input:

editing
distance

Output:

5

Delete e, insert s after i, substitute i for a, substitute g for c, insert e to the end.

e	d	i	—	t	i	n	—	g
—	d	i	s	t	a	n	c	e

Sample 3.

Input:

ab
ab

Output:

0