

## Problem 1

Find the LCS length of two strings: "acabccaba" and "bcaabacc".

### Solution

The algorithm itself needs the diagonal value at the begin, so we add the additional row and column at the beginning here.

Table 1: The LCS table

		a	c	a	b	c	c	a	b	a
	0	0	0	0	0	0	0	0	0	0
b	0	0	0	0	1	1	1	1	1	1
c	0	0	1	1	1	2	2	2	2	2
a	0	1	1	2	2	2	2	3	3	3
a	0	1	1	2	2	2	2	3	3	4
b	0	1	1	1	3	3	3	3	4	4
a	0	1	1	2	3	3	3	4	4	5
c	0	1	2	2	3	4	4	4	4	5
c	0	1	2	2	3	4	5	5	5	5

After completing the table, we can now remove the added dummy row and column to fit what the question wants.

Table 2: The LCS table

	a	c	a	b	c	c	a	b	a
b	0	0	0	1	1	1	1	1	1
c	0	1	1	1	2	2	2	2	2
a	1	1	2	2	2	2	3	3	3
a	1	1	2	2	2	2	3	3	4
b	1	1	1	3	3	3	3	4	4
a	1	1	2	3	3	3	4	4	5
c	1	2	2	3	4	4	4	4	5
c	1	2	2	3	4	5	5	5	5