Longest Common Subsequence

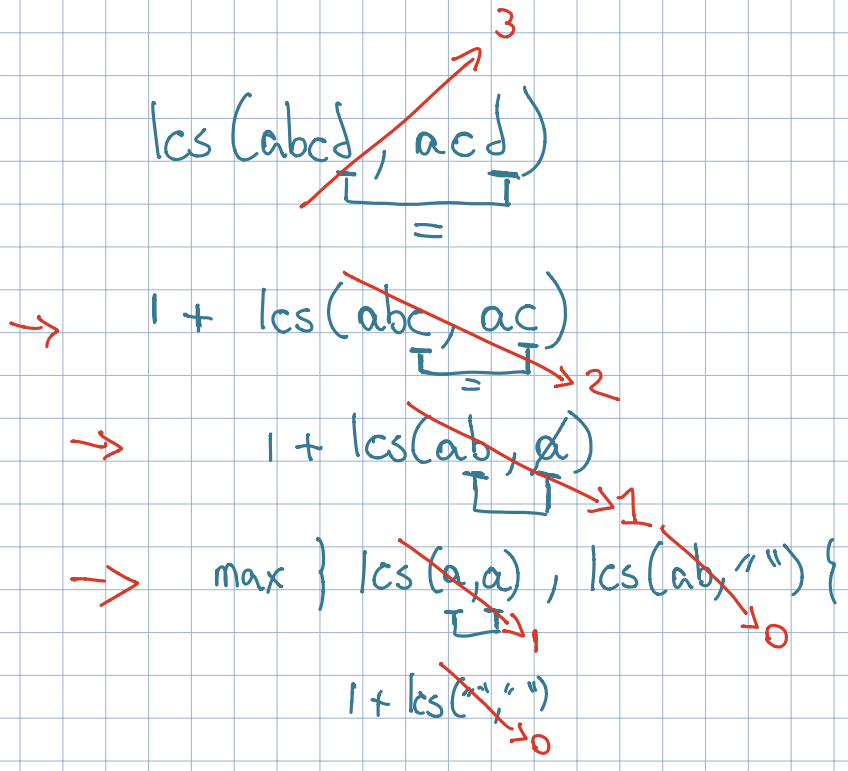
Definition

- a c b a
- a b a

{b, a} {a, b} , {a, a}
{a}
{b} {a, b, a} lcs(acba, cbc) = 3

Intuition

- a b c d
- a c d



lcs(abcd, acd)

		a	c	d
	0	0	0	0
a	0	1	1	1
b	0	1	1	1
c	0	1	2	2
d	0	1	2	3

acd

Sequence Alignment (global)

Intuition

ABCC
BCCD

"ABCC-" / "-BCCD" | ABCC / BCCD

- ABCCD
- ACC

ABCCD / A-CC- | ABCCD / -ACC- | ABCCD / A-C-C

1 = match, −1 = mismatch, −2 = gap

+1 → reward; 0 → reward; − → penalty

		A	C	C
	0	-2	-4	-6
A	-2	1	-1	-3
B	-4	-1	0	-2
C	-6	-3	0	1
C	-8	-5	-2	1
D	-10	-7	-4	-1

A / A | - / A | A / -

max { 0 + 1 ↖ ; -2 -2 ↑ ; -2 -2 ← }

max { -4 -1 ↖ ; -6 -2 ↑ ; -1 -2 ← }

ABCCD
A-CC-