

Use dynamic programming approach to find the minimal number of edit steps(insertion, deletion, or replacement) used to change the string $A = \text{acbabca}$ to the string $B = \text{babcbac}$ (7 chars)

(1)How many edit steps are used

(2)Describe how those edit steps are applied in changing A to B

【87 年交大資工所】

Ans.

A	B	\emptyset	b	a	b	c	b	a	c
\emptyset		0	$\leftarrow 1$	$\leftarrow 2$	$\leftarrow 3$	$\leftarrow 4$	$\leftarrow 5$	$\leftarrow 6$	$\leftarrow 7$
a		(1)	x1	$\nwarrow 1$	$\leftarrow 2$	$\leftarrow 3$	$\leftarrow 4$	$\leftarrow 5$	$\leftarrow 6$
c		(2)	x2	x2	x2	$\nwarrow 2$	$\leftarrow 3$	$\leftarrow 4$	$\nwarrow 5$
b			$\uparrow 3$	$\nwarrow 2$	x3	$\nwarrow 2$	x3	$\nwarrow 2$	$\leftarrow 3$
a			$\uparrow 4$	$\uparrow 3$	$\nwarrow 2$	$\leftarrow 3$	x3	$\uparrow 3$	$\nwarrow 2$
b			$\uparrow 5$	$\nwarrow 4$	$\uparrow 3$	$\nwarrow 2$	$\leftarrow 3$	$\nwarrow 3$	$\uparrow 3$
c			$\uparrow 6$	$\uparrow 5$	$\uparrow 4$	$\uparrow 3$	$\nwarrow 2$	(3)	x4
a			$\uparrow 7$	$\uparrow 6$	$\nwarrow 5$	$\uparrow 4$	$\uparrow 3$	x3	(4)

(1)
4 次

(2)

A 原本是 a c b a b c a

(i) 刪第 1 個 a, 變為 c b a b c a

(ii) 刪第 1 個 c, 變為 b a b c a

(iii) 插入 b 到 c 後, 變為 b a b c b a

(iv) 插入 c 到 a 後, 變為 b a b c b a c

#