202365250 김시현

1. Fill in the blanks in the following LCS computation.

	j	0	1	2	3	4	5	6
i		y_j	B	D	C	A	B	A
0	x_i	0	0	0	0	0	0	0
1	A	0	↑ 0	↑ 0	↑ 0	↖ 1	← 1	↖ 1
2	B	0	↖ 1	← 1	← 1	↑ 1	↖ 2	← 2
3	C	0	↑ 1	↑ 1	↖ 2	← 2	↑ 2	↑ 2
4	B	0	↖ 1	↑ 1	↑ 2	↑ 2	↖ 3	← 3
5	D	0	↑ 1	↖ 2	↑ 2	↑ 2	↑ 3	↑ 3
6	A	0	↑ 1	↑ 2	↑ 2	↖ 3	↑ 3	↖ 4
7	B	0	↖ 1	↑ 2	↑ 2	↑ 3	↖ 4	↑ 4

2. Fill in the blanks in the following multiple LCS computation.

	j	0	1	2	3	4	5	6
i		y_j	B	D	C	A	B	A
0	x_i	0	0	0	0	0	0	0
1	A	0	↙↑ 0	↙↑ 0	↙↑ 0	↖ 1	← 1	↖ 1
2	B	0	↖ 1	← 1	← 1	←↑ 1	↖ 2	← 2
3	C	0	↑ 1	←↑ 1	↖ 2	← 2	←↑ 2	←↑ 2
4	B	0	↖ 1	←↑ 1	↑ 2	←↑ 2	↖ 3	← 3
5	D	0	↑ 1	↖ 2	←↑ 2	←↑ 2	↑ 3	←↑ 3
6	A	0	↑ 1	↑ 2	←↑ 2	↖ 3	←↑ 3	↖ 4
7	B	0	↖ 2	↑ 2	←↑ 2	↑ 3	↖ 4	←↑ 4

3. Fill in the blanks in the following pseudocode for LCS-LENGTH.

LCS-LENGTH (X, Y)
    $m = X.length$
    $n = Y.length$
    let $b[1 .. m, 1 .. n]$ and $c[0 .. m, 0 .. n]$ be new tables
    for $i = 1$ **to** m
        $c[i, 0] = 0$
    for $j = 1$ **to** n
        $c[0, j] = 0$
    for $i = 1$ **to** m
        for $j = 1$ **to** n
            if $x_i == y_j$
                $c[i][j] = c[i-1][j-1] + 1$
                $b[i, j] = $ "↖"
            elseif $c[i-1][j] \geq c[i][j-0]$
                $c[i][j] = c[i-1][j]$
                $b[i, j] = $ "↑"
            else $c[i][j] = c[i][j-1]$
                $b[i, j] = $ "←"
    return c and b

4. Fill in the blanks in the following pseudocode for PRINT-LCS.

PRINT-LCS (b, X, i, j)
    if $i == 0$ or $j == 0$
        return
    if $b[i, j] == $ "↖"
        PRINT-LCS$(b, X, i-1, j-1)$
        print x_i
    elseif $b[i, j] == $ " ↑ "
        PRINT-LCS $(b, X, i-1, j)$
    else PRINT-LCS$(b, X, i, j-1)$