

LCS

X: P e c c a

Y: F a c i e

| | X: | P | E | C | O | R | A |
|----|----|---|----|----|----|----|----|
| Y: | P | 0 | 0 | 0 | 0 | 0 | 0 |
| e | F | 0 | 0↑ | 0↑ | 0↑ | 0↑ | 0↑ |
| a | R | 0 | 0↑ | 0↑ | 0↑ | 1↑ | 1↑ |
| c | O | 0 | 0↑ | 0↑ | 0↑ | 1↑ | 1↑ |
| c | C | 0 | 0↑ | 0↑ | 1↑ | 1↑ | 1↑ |
| a | I | 0 | 0↑ | 0↑ | 1↑ | 1↑ | 1↑ |
| e | O | 0 | 0↑ | 0↑ | 1↑ | 2↑ | 2↑ |

C O

LCS(X, Y) // O(n·m)

$n \leftarrow |X|$

$m \leftarrow |Y|$

FOR $i \leftarrow 1$ TO n

$C[i][0] \leftarrow 0$

FOR $j \leftarrow 1$ TO m

$C[0][j] \leftarrow 0$

FOR $i \leftarrow 1$ TO n

FOR $j \leftarrow 1$ TO m

IF $X[i] = Y[j]$ THEN

$C[i][j] \leftarrow C[i-1][j-1] + 1$; $B[i][j] \leftarrow \nwarrow$;

ELSE IF $C[i-1][j] \geq C[i][j-1]$

$C[i][j] \leftarrow C[i-1][j]$; $B[i][j] \leftarrow \uparrow$;

ELSE $C[i][j] \leftarrow C[i][j-1]$; $B[i][j] \leftarrow \leftarrow$;

RETURN C, B

Distancia di edit

X = Pecora

Y = Freccia

| | Ø | P | E | C | O | R | A |
|---|---|----|----|----|----|----|----|
| Ø | Ø | 1 | 2 | 3 | 4 | 5 | 6 |
| F | 1 | 1↖ | 2↖ | 3↖ | 4↖ | 5↖ | 6↖ |
| R | 2 | 2↖ | 2↖ | 3↖ | 4↖ | 4↖ | 5↖ |
| O | 3 | 3↖ | 3↖ | 3↖ | 3↖ | 4↖ | 5↖ |
| C | 4 | 4↖ | 4↖ | 4↖ | 4↖ | 4↖ | 5↖ |
| I | 5 | 5↖ | 5↖ | 5↖ | 5↖ | 5↖ | 5↖ |
| A | 6 | 6↖ | 6↖ | 6↖ | 5↖ | 6↖ | 6↖ |

Distancia - edit (X, Y) // $O(m \cdot m)$

$m \leftarrow |X|$

$n \leftarrow |Y|$

$M \leftarrow \text{NEW_MATRIX}[m][n]$

FOR $i \leftarrow 1$ TO n

$M[i][0] \leftarrow i$

FOR $j \leftarrow 1$ TO m

$M[0][j] \leftarrow j$

FOR $i \leftarrow 1$ TO n

FOR $j \leftarrow 1$ TO m

IF $X[i] = Y[j]$ THEN

$p \leftarrow 0$

ELSE $p \leftarrow 1$

$M[i][j] \leftarrow \min (M[i][j-1] + 1, M[i-1][j] + 1, M[i-1][j-1] + p)$

RETURN M