

DP Array (Matrix)

state transition function

word1 = horse

word2 = rose

Step 1. Determine the size of Matrix

6x5 init, zero

$m = \text{len}(\text{word1}) = 5$

$n = \text{len}(\text{word2}) = 4$

Step 2: Init. border states

Step 3: Define

state transition function,

Compute all DP values

D: DP matrix

#	#	h	o	r	s	e
#	0	1	2	3	4	5
h	1					
o	2					
s	3					
e	4					

$$D[i][j] = \min \begin{cases} D[i][j-1] + 1, \\ D[i-1][j] + 1, \\ D[i-1][j-1] + f \end{cases} \quad f = \begin{cases} 0 & \text{if } \text{word1}[i] == \text{word2}[j] \\ 1 & \text{else} \end{cases}$$

$D[m][n]$ is edit distance

return $D[m][n]$