Info 4300: Language and Information - Lecture 2
Minimum edit distance worksheet.

Name:
Netid:

Target

	#	K	A	R	D	A	S	H	I	A	N	S
#												
D												
A												
L				4	5	4	5	6	7	8	9	10
M				5								
A				6								
T				7			8	9	10	9	10	11
I				8			9					
A				9			10					
N				10			11					
S				11			10					

Source

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Sketch of the Wagner-Fisher algorithm for calculating minimum edit distance; we consider a cost of 1 for insertions, 1 for deletions, and 2 for substitutions.

D(i,j)=”The cost of transforming the first i letters of the Source in the first j letters of the Target”

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Initializations:
    for i=0,len(Source):
        $D(i,0)=i$
    for j=0,len(Target):
        $D(0,j)=j$
    $D(0,0)=0$

for i=1,len(Source):
    for j=1,len(Target):

        $D(i,j) = \min \begin{cases} D(i-1,j) + 1 & \text{[deletion]} \\ D(i,j-1) + 1 & \text{[insertion]} \\ D(i-1,j-1) + \begin{matrix} 2;\ \text{if } Target(j) \neq Source(i) \\ 0;\ \text{if } Target(j) = Source\ (i) \end{matrix} & \text{[subst.]} \end{cases}$

Return  $D(len(Source), len(Target))$
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