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

Name:
Netid:
Left colleague netid:
Right colleague 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

Name:
Netid:

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"

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):

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

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