NOTES ON LEVENSHTEIN DISTANCE

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1. LEVENSHTEIN_DISTANCE(DEPART, LEOPARD)

← Deletion (cost 1) of a letter x in first word: $\begin{smallmatrix}x\\ *\end{smallmatrix}$
↓ Insertion (cost 1) of a letter x in second word: $\begin{smallmatrix}*\\ x\end{smallmatrix}$
↙ Match (cost 0) of the same letter x in both words: $\begin{smallmatrix}x\\ x\end{smallmatrix}$
Substitution (cost 2) of a letter x in first word by a different letter y in second word: $\begin{smallmatrix}x\\ y\end{smallmatrix}$

d	7 ↓	6 ↙	← 7 ↓	6 ↓	5 ↓	4 ↓	← 5 ↙ ↓
r	6 ↓	← 7 ↙ ↓	6 ↓	5 ↓	4 ↓	3 ↙	← 4
a	5 ↓	← 6 ↙ ↓	5 ↓	4 ↓	3 ↙	← 4	← 5
p	4 ↓	← 5 ↙ ↓	4 ↓	3 ↙	← 4	← 5	← 6
o	3 ↓	← 4 ↙ ↓	3 ↓	← 4 ↙ ↓	← 5 ↙ ↓	← 6 ↙ ↓	← 7 ↙ ↓
e	2 ↓	← 3 ↙ ↓	2 ↙	← 3	← 4	← 5	← 6
l	1 ↓	← 2 ↙ ↓	← 3 ↙ ↓	← 4 ↙ ↓	← 5 ↙ ↓	← 6 ↙ ↓	← 7 ↙ ↓
·	0	← 1	← 2	← 3	← 4	← 5	← 6
	·	d	e	p	a	r	t

```
* d e * p a r * t        d * e * p a r * t        d e * p a r * t
l * e o p a r d *        * l e o p a r d *        l e o p a r d *

* d e * p a r t *        d * e * p a r t *        d e * p a r t *
l * e o p a r * d        * l e o p a r * d        l e o p a r * d

* d e * p a r t          d * e * p a r t          d e * p a r t
l * e o p a r d          * l e o p a r d          l e o p a r d
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2. LEVENSHTEIN_DISTANCE(PAPER, POPE)

4	e	4 ↓		3	← 4 ↙ ↓		3 ↑	↙	2	←	3
3	p	3 ↓	↙	2 ↓	← 3 ↙ ↓	↙	2	←	3	←	4
2	o	2 ↓		1 ↓	← 2 ↙ ↑	← ↙	3 ↑	← ↙	4 ↑	← ↙	5 ↑
1	p	1 ↓	↙	0	← 1	↙	2	←	3	←	4
0	·	0	←	1	← 2	←	3	←	4	←	5
		·		p	a		p		e		r
		0		1	2		3		4		5

table:

```
[[[0 , []] , [1 , ['V']] , [2 , ['V']] , [3 , ['V']] , [4 , ['V']]] ,
 [[1 , ['H']] , [0 , ['D']] , [1 , ['V']] , [2 , ['D' , 'V']] , [3 , ['V']]] ,
 [[2 , ['H']] , [1 , ['H']] , [2 , ['D' , 'H' , 'V']] , [3 , ['D' , 'H' , 'V']] , [4 , ['D' , 'H' , 'V']]] ,
 [[3 , ['H']] , [2 , ['D' , 'H']] , [3 , ['D' , 'H' , 'V']] , [2 , ['D']] , [3 , ['V']]] ,
 [[4 , ['H']] , [3 , ['H']] , [4 , ['D' , 'H' , 'V']] , [3 , ['H']] , [2 , ['D']]] ,
 [[5 , ['H']] , [4 , ['H']] , [5 , ['D' , 'H' , 'V']] , [4 , ['H']] , [3 , ['H']]]]
```

entwined_aligned_pairs:

```
5 4 ['']
    H 4 4 ['r*']
          D 3 3 ['r*ee']
                D 2 2 ['r*eepp']
                      D 1 1 ['r*eeppao']
                            D 0 0 ['r*eeppaopp']
                        1 1 ['r*eeppaopp']
                      H 1 2 ['r*eeppa*']
                            V 1 1 ['r*eeppa**o']
                                  D 0 0 ['r*eeppa**opp']
                              1 1 ['r*eeppa**opp']
                        1 2 ['r*eeppa**opp']
                      V 2 1 ['r*eepp*o']
                            H 1 1 ['r*eepp*oa*']
                                  D 0 0 ['r*eepp*oa*pp']
                              1 1 ['r*eepp*oa*pp']
                        2 1 ['r*eepp*oa*pp']
                  2 2 ['r*eeppa**opp', 'r*eepp*oa*pp', 'r*eeppaopp']
            3 3 ['r*eeppa**opp', 'r*eepp*oa*pp', 'r*eeppaopp']
      4 4 ['r*eeppa**opp', 'r*eepp*oa*pp', 'r*eeppaopp']
5 4 ['r*eeppa**opp', 'r*eepp*oa*pp', 'r*eeppaopp']
```