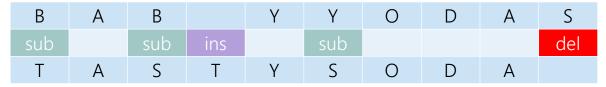
## Example

What's the distance between babyyodas and tastysoda?



Distance: 5, one point for each colored box

Quick Checks – can you explain these?

If x has length n and y has length m, the edit distance is at most  $\max(x,y)$ 

The distance from x to y is the same as from y to x (i.e. transforming x to y and y to x are the same)

## Finding a recurrence

What information would let us simplify the problem?

What would let us "take one step" toward the solution?

"Handling" one character of x or y

i.e. choosing one of insert, delete, or substitution and increasing the "distance" by 1

OR realizing the characters are the same and matching for free.

OPT(i,j) is the edit distance of the strings  $x_1x_2 \cdots x_i$  and  $y_1y_2 \cdots y_j$ . (we're indexing strings from 1, it'll make things a little prettier).

Edit Distance Fill in the next two entries. Be careful with the sub/match distinction!											
ОРТ	[( <b>i</b> , <b>j</b> ]	0	В, 1	A, 2	В, 3	Y, 4	Y, 5	O, 6	D, 7	A, 8	S, 9
0		0	1	2	3	4	5	6	7	8	9
Т	1	1	1	2	3	4	5	6	7	8	9
Α	2	2	2	1	2	3	4	5	6	7	8
S	3	3	3	2	2	3	4	5	6	7	7
Т	4	4	4	3	3	3	4	5	6	7	8
Υ	5	5	5	4	4	3					
S	6										
O	7										
D	8										
Α	9										

## Two Values

Pollev.com/robbie

Need two recursive values:

INCLUDE(i): sum of the maximum sum subarray among elements from 0 to i that includes index i in the sum

 $\mathit{OPT}(i)$ : sum of the maximum sum subarray among elements 0 to i (that might or might not include i)

How can you calculate these values? Try to write recurrence(s), then think about memoization and running time.