

Recursive Strategy: Counting Zeroes

Problem	Count the zeroes in an array of ints, e.g. [0, 1, 1, 0, 1] Answer = 2
What is the smallest version of this problem? <i>(leads to base case)</i>	If the array consists of one element, e.g. [0] or [1], return 1 if the element is a zero, else return 0.
What recursion strategy should I use: <ul style="list-style-type: none"> • Forwards recursion <i>(each recursive step gets larger; the base case is based on # of iterations)</i> • Backwards recursion ← classical <i>(each recursive step gets smaller until the base case is reached)</i> 	Backwards recursion
For recursive cases, should I: <ul style="list-style-type: none"> • Process first and recur last? <i>(process as I move <u>up</u> the recursive stack)</i> • Recur first and process last? <i>(process as I move <u>down</u> the recursive stack)</i> 	Process as I move <u>up</u> the stack.
What should each recursive step do?	Keep a running total of the number of zeroes seen. If the first element of the array is a 0, increment running total; i.e. keep sending the recursive function an increasingly large count of zeroes.
For backwards recursion solutions: How should the problem be reduced on each step?	Send progressively smaller Arrays on each iteration where each Array is missing its first element.*
For forwards recursion solutions: How should I keep track of the running answer?	N/A

*Instead of sending smaller and smaller arrays each time, could you also send the **same array** to each step as well as the starting position for evaluation (which would increment by one on each recursion)?