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## Homework 4 – Written answers part

### Task 2

Fill in the tables below for each one of the three recursive implementations of smallest.

The remaining empty row is for your convenience in case you run additional tests or want to add comments. Consider the best and worst behavior when these functions are called on an array of 5 elements. The best and worst behavior refers to the number of recursive calls. If there is some array with 5 elements for which one of the functions makes the fewest possible number of recursive calls and another array of the same size for which it makes the largest number of recursive calls, those are your array examples for best and worst case.

If there is no such behavior (it does the same for any data) give one example and say so, but you should still give the counts.

rec\_min\_1

	Array with 5 elements	base_ct	rec_ct	Max depth	$T(N) =$ (for N, not 5)	Solution to $T(N)$ as $\Theta$
Best Case	1,2,3,4,5	1	4	5	$T(N) = T(N-1) + c$	
Worst case	5,4,3,2,1	1	4	5	$T(N) = T(N-1) + c$	
Average case	3,2,1,4,5	1	4	5	$T(N) = T(N-1) + c$	

In this scenario, both the best and worst cases are pretty much the same

rec\_min\_2

	Array with 5 elements	base_ct	rec_ct	Max depth	$T(N) =$ (for N, not 5)	Solution to $T(N)$ as $\Theta$
Best Case	5,4,3,2,1	1	4	5		
Worst case	1,2,3,4,5	16	15	5		
Average case	3,2,1,4,5	4	11	5		

rec\_min\_tail

	Array with 5 elements	base_ct	rec_ct	Max depth	$T(N) =$ (for N, not 5)	Solution to $T(N)$ as $\Theta$
Best Case	1,2,3,4,5	1	5	5		
Worst case	5,4,3,2,1	1	5	5		
Average case	3,2,1,4,5	1	5	5		

Reminder: add written answers for the other tasks as needed.