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## Advanced Algorithms

WS 2017/18

Homework 12

15.01.2018

### Exercise 1:

Guess to reduce the additional storage needed by mergesort.

### Exercise 2:

Work out the analysis of  $QS(n)$ . Show that the obtained upper bound is tight.

### Exercise 3:

Show that the result of the analysis of randomized quicksort would not be worse if the assumption that  $n$  distinct numbers have to be sorted does not hold.

### Exercise 4:

Prove Lemma 4.4 of the lecture.