

Ex 2.3.20: Nonrecursive quicksort

Implement a nonrecursive version of quicksort based on a main loop where a subarray is popped from a stack to be partitioned, and the resulting subarrays are pushed onto the stack. Note : Push the larger of the subarrays onto the stack first, which guarantees that the stack will have at most $\lg N$ entries.

Solution: The stack is used to keep track of the 'partition parts' along the path of execution, so its size corresponds to the recursive depth. Since we store atleast half (ie; the larger of the subarrays) of remaining elements of stack every time, this number is halved with every partition which results in a depth of at most $\log N$.