

Q Optimized Binary Heap

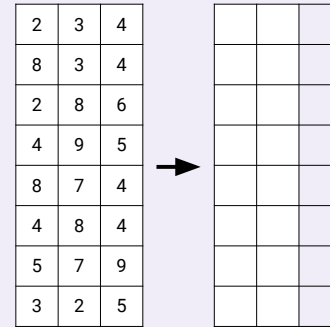
Consider a heap optimization that achieves $O(\log^* N)$ runtime for removing the min or max item on any input, where $\log^* N$ is not in $\Omega(\log N)$.

Give a runtime argument for why this optimization is impossible.

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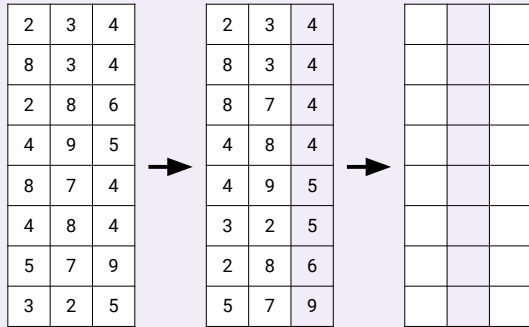
Q1: Give a runtime argument for why this optimization is impossible.

Q Counting Sort on Rightmost Digit



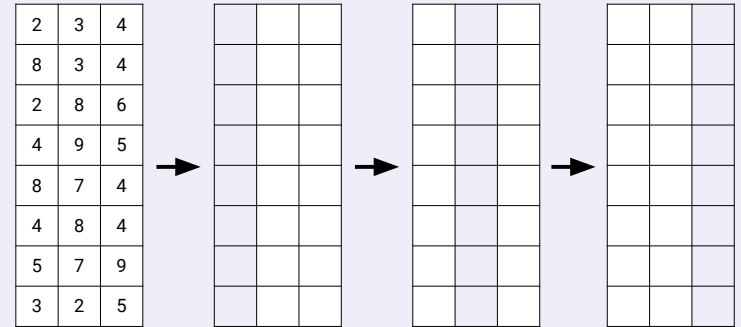
Q1: Show the output of counting sort on the rightmost digit in the input.

Q Counting Sort on Rightmost + Middle Digit



Q1: Show the output of counting sort on the rightmost + middle digit in the input, i.e. after two passes of LSD radix sort.

Q Left-to-Right LSD Radix Sort



Q1: Suppose we run LSD radix sort from left to right. Does this work?