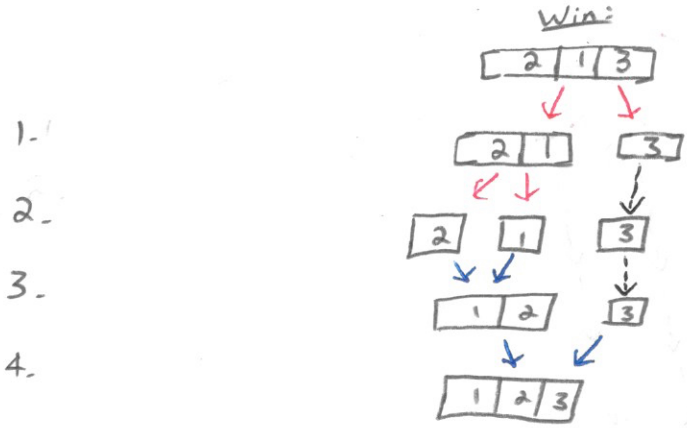
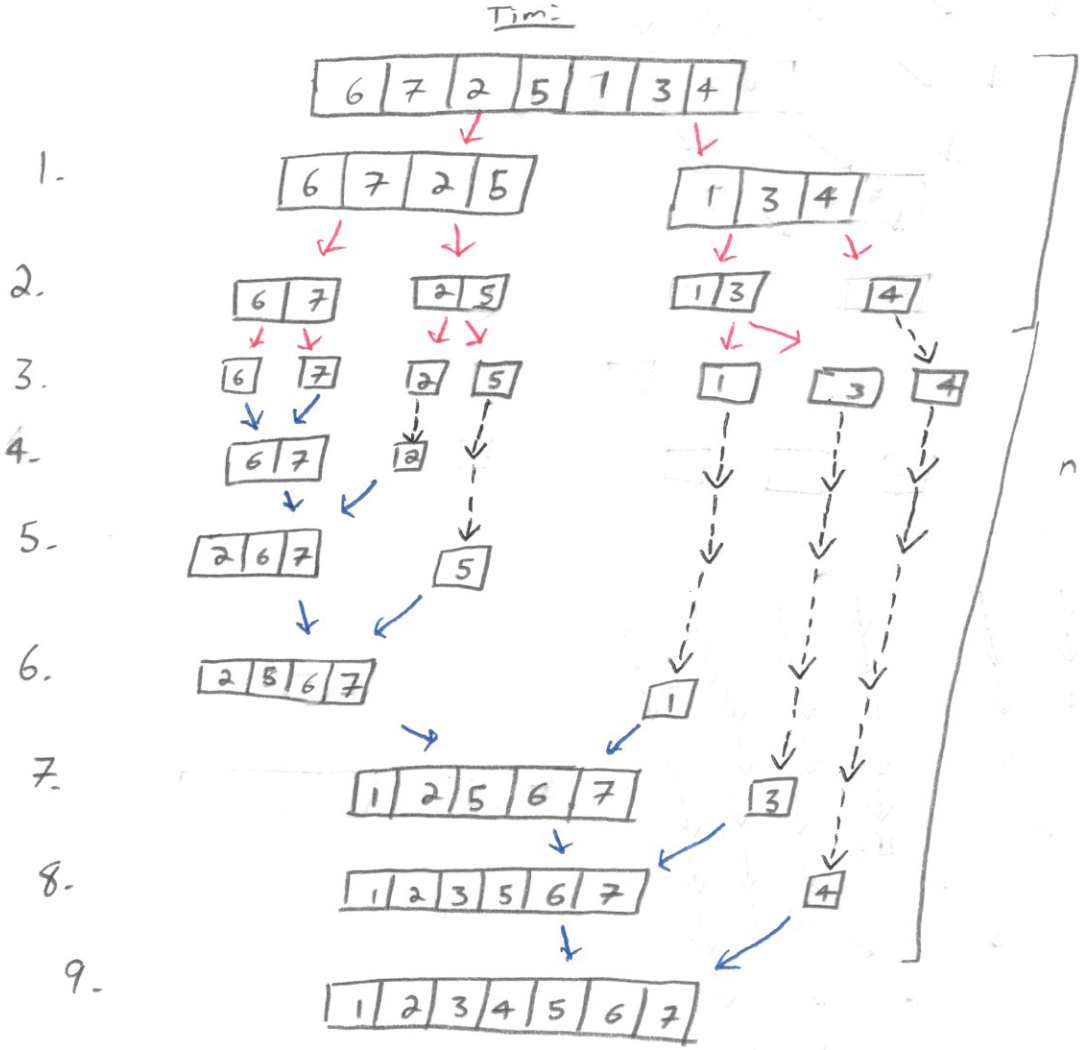
Raunak Chowdhury
APCS2 pd2
HW06 -- How Fast Are your Turtles?
2018-02-12

Win:



All numbers being carried over are in black.
All splits are shown in red.
All merges are in blue.

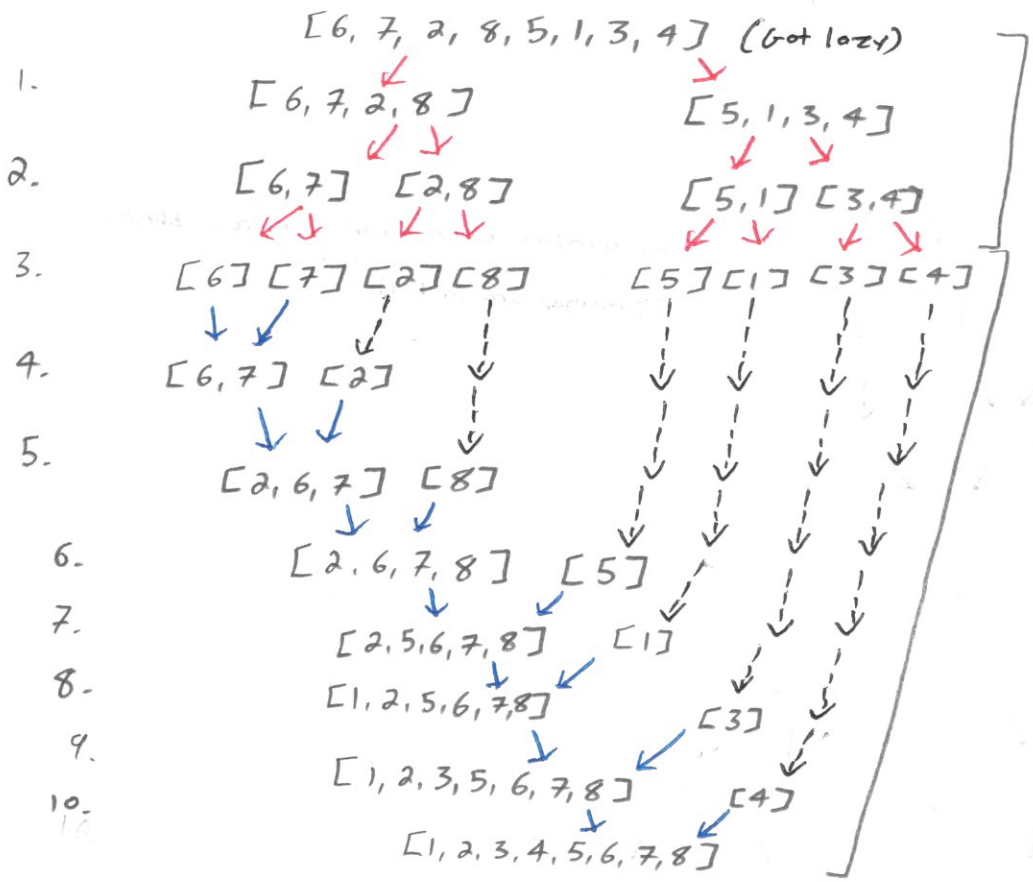
Tim:



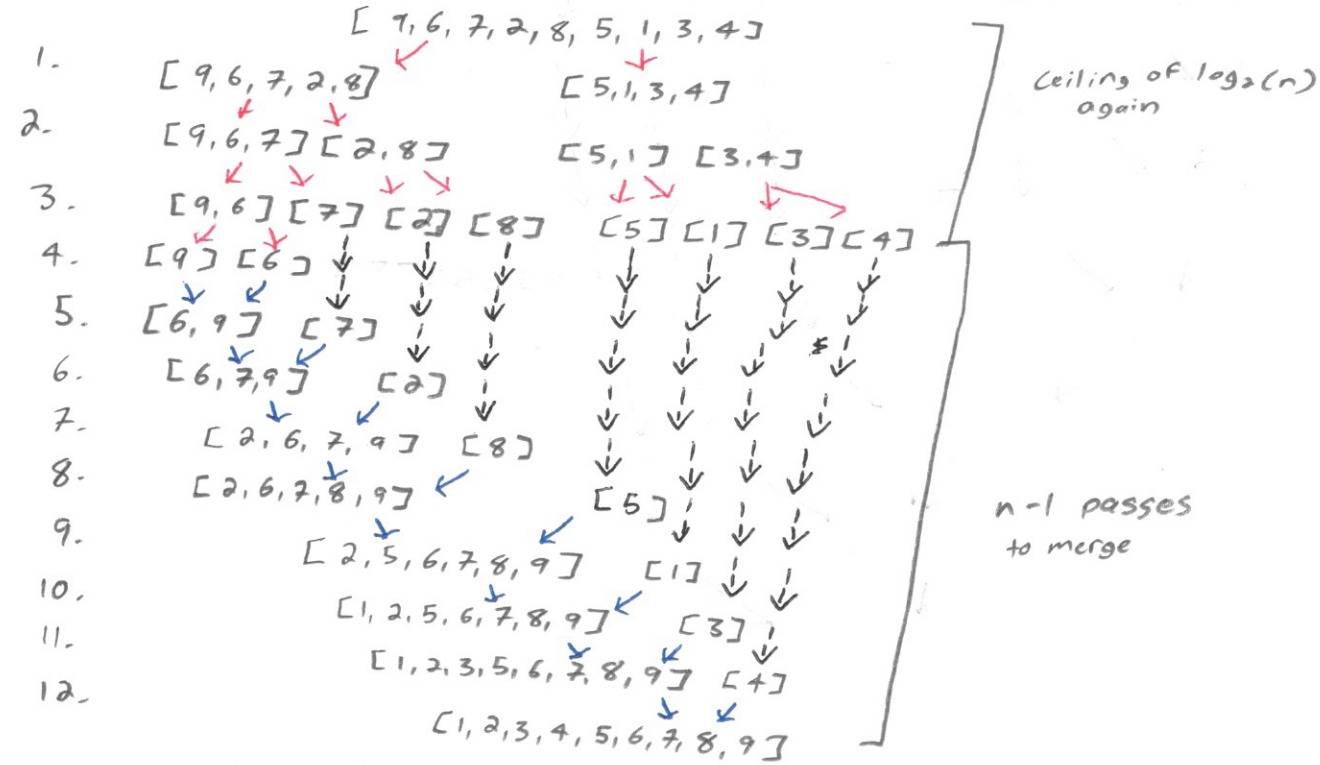
Took $\lceil \log_2(n) \rceil$ passes to completely split for an array of odd length.

$n-1$ passes to merge completely

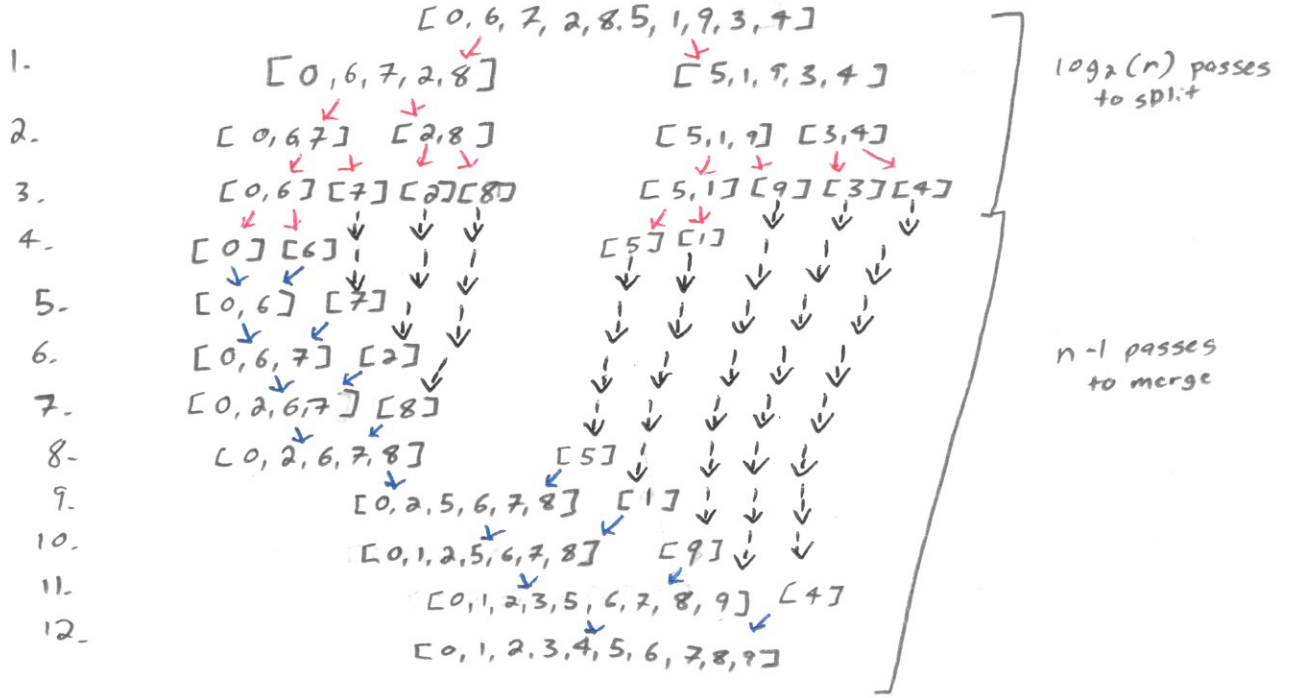
Jeremy:



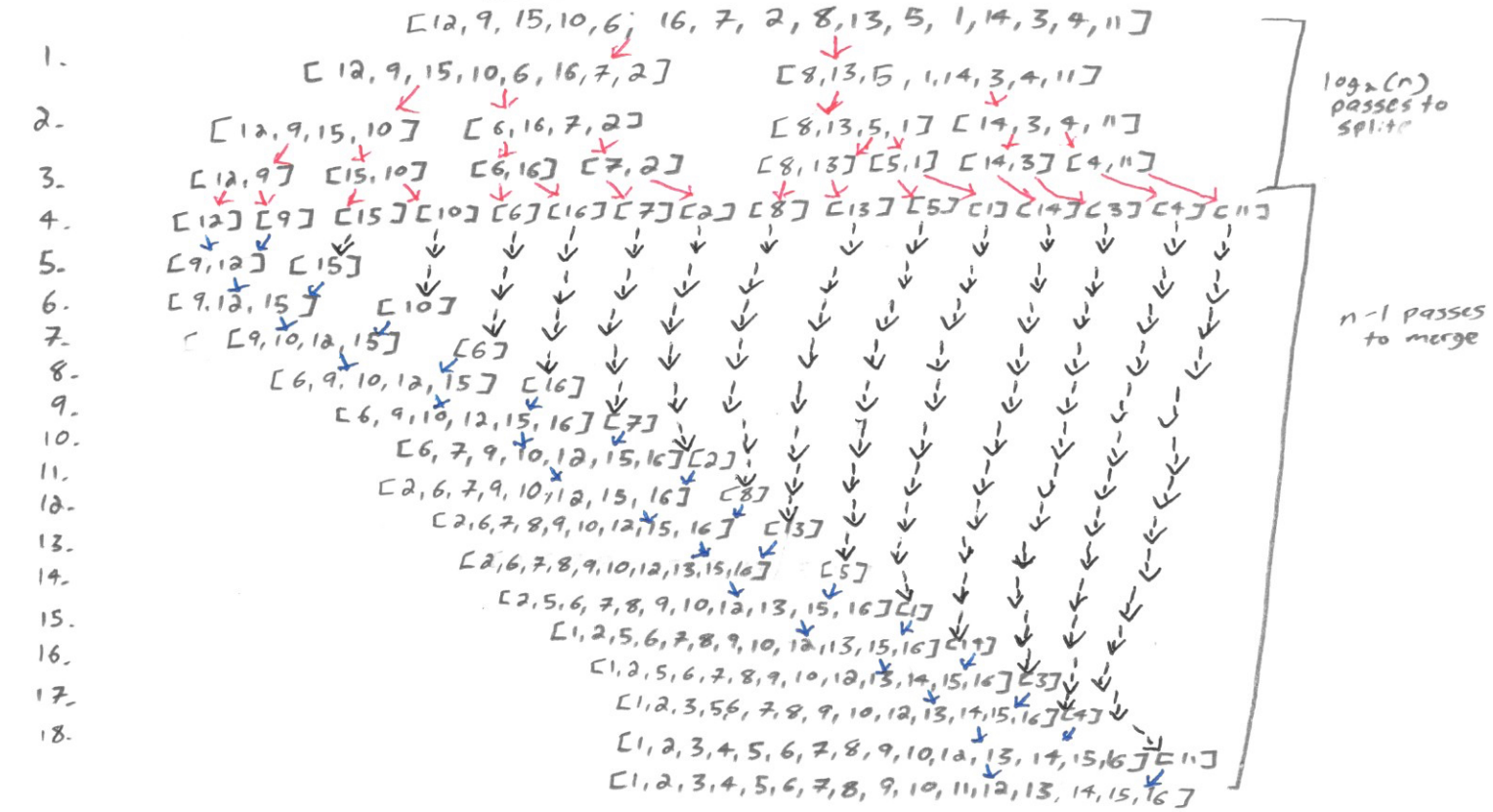
Régine:



Richard:



William:



Explanation: The runtime for this algorithm is $O[n \log_2(n)]$. According to the trace diagrams, it takes $\log_2(n)$ passes to split the array completely so that each value in the original array is in an array with length 1. It takes n-1 passes to merge these arrays, indicating a runtime of $O(n)$ for merging. Since both runtimes relate to the same dataset they stack multiplicatively, resulting in a run time of $O(n \log n)$.