1. Explain why a quick sort has a best, average, and worst case behavior, while a merge sort has an “ever case” behavior.

Quick sort has a best, average and worst case because of the ways the data it is sorting can affect the algorithm. For example if the data is in reverse order, this is the worst case for the way the quick sort algorithm functions and will result in the longest running times. For random data the quick sort can be said to follow an average time and for best case the pivot point will always split the data in half. Since merge sort does not have this idea of a pivot that can be swayed by the composition of the data it always takes the same time to run regardless of how the data looks.