Group 6

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Scores and times

After Prelim 1 our group took 6th and on the first file scores were (808,815,806) with median being 808. And on the second file it was (758,798,803) with median 798. Our total score for prelim 1 was 1606.

After Prelim 2 our group stayed in 6th and on the first file scores were (1499,1495,1501) with median 1499. On the second file scores were (1010,1009,1009) with median 1009. Our total score for prelim 2 was 2508.

In the final run, on the first file our sorting algorithm had (2700, 2709, 2706), with median being 2706.

On the second file our algorithm had (246, 245, 246) with median 246. Our team took 8th and our final score was 2952.
We had no correctness issues reported.

Our Algorithm -Modified QuickSort

We switched our algorithm from timsort to a modified version of Quicksort.The modifications we made to Quicksort were that we used two pivots to split the array into three instead of just two. To select the pivots we used a median of three approach, this mostly gets rid of the worst case for Quicksort since now it will not choose the first or last element in the array (there is still two cases that it will be n^2). We also added in Insertion Sort to sort the three sub arrays. We also have tail recursion optimization so that while our low partition<high partition so it calls itself on the smallest partitions first and then the largest partition.

Best/Worst Case

Our best case for our algorithm is O(n log n) and our worst case is O(n^2). For best case it splits it into three roughly equal groups and for worst case it has low,med, and high are the three smallest or largest elements. We store elements in a string array.