**Quick Select Study Report**

In this project, the Quick Select algorithm is used to find the Kth smallest element in the array. Pivot selection is based on grouping the array and finding the median of the groups. Recursion is used and the pivot element becomes the median of all group medians. The user needs to input the array size and K-value into the program. Group size must be greater than 2 and less than or equal to the array size. Otherwise, the program will not execute the algorithm.

I will take as an example three different group sizes, and I will show which size requires more time to execute and which one requires less.

Group sizes: 3, 5, and 7.

Array sizes: 20, 50, 100, 250.

Kth smallest element looking for: 5

All three group sizes have an average time complexity of O(n). The smaller the group size, the more time the program will require for execution, since finding the median of the medians and recursively grouping the array will require more operations. In this case, the group of 3 requires the most computer operations. It is followed by a group of 5 and a group of 7 that requires the fewest operations to perform.

Operations were counted by comparisons and exchanges.