My program is designed to take in a file, as defined by the user, and to sort all of the integers contained in the file using four different sorting algorithms. The integers are added into a dynamic array to be sorted. These algorithms used to sort the array are bubblesort, selectionsort, insertionsort, and quicksort. The program records the time each algorithm takes to sort the file and outputs it to the screen. The integers as sorted by each algorithm are then output to a separate file for each algorithm. There is then a second part of the program where 10 random integers are added to the end of the numbers taken from the file. The new array with 10 additional numbers is then sorted by each algorithm, and there is another output file for each algorithm. My program seems to work sufficiently. There are four separate outputs for the first part of the program, and they all match each other. There are also four outputs for the second part, and they all match each other. A smaller test file of numbers is sorted successfully, and the larger file of 100000 integers appears to be sorted successfully. The time taken for each algorithm to execute is reasonable when the algorithms are compared to each other. Bubblesort is slowest, and quicksort is the fastest the first time around. Insertionsort is fastest when the data is nearly sorted.

My biggest problem with my program is that it takes a long time to run. The program doesn’t seem to be doing anything for a few seconds before it outputs the result. My other problem is that I’m not sure if memory is being correctly deallocated. I also wasn’t completely sure which unit of time was contained in the timing variable.