CS202 HW2

Given n sorted arrays, each containing n `int`'s between 0 and 10^9. How to merge them into a single sorted array that contains all k^2 elements?

1. Write a program `merge1` that merges the lists one by one. That is, merge the first array and the second array into a new array; then merge this new array with the third array, and so on, until there is one array left. Test your program on small input (e.g., $n = 4, 10$) for correctness. Then run your program on large input (e.g., $n = 1024, 2000$) to measure the growth of its running time.

2. Design and implement an algorithm `merge2` whose running time is asymptotically better than `merge1`. Run the same test and time measurements on the new algorithm. Hint: use divide-and-conquer.

3. Analyze the running time of both algorithms. Create a line plot that compares the observed running time of both algorithms from your experiments. Does the observed running time of both algorithms match your analysis?