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GCD Homework

**Tests performed**

I tested various GCD algorithms on the span of integers from a bit-length of 0 to 63. By using the –O0 compiler flag, I was able to ensure that minimal optimization would be made on the tested algorithms. After completing the results, I re-ran this test with the –Ofast flag to observe how optimization would affect the performance of these algorithms. Using a millisecond clock, I ran a million tests for each algorithm as well as each bit-length. This would ensure accurate and comparable results.

**Results**

Looking at the optimized and un-optimized results, we can see that the non-recursive Euclid algorithm performs the fastest. The optimization did improve the general performance of the algorithms and in some cases, made algorithms perform faster than ones they were previously slower than. I was surprised to find that optimization doubled the performance of the algorithms on high-bit numbers. Continued are 3 diagrams for both optimized and non-optimized tests.