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ISTE-222 Assignment 3: Algorithm Analysis

The Count of Monte Carlo Report

Table 1 – Average Number of Operations for Searches using Various Search Algorithms

	Successful Searches	Unsuccessful Searches	Theoretical
Linear Search	500	512	500
Binary Search	8	9	9.97
Interpolation Search	3	2	3.32

For the successful linear search, the 500 searches that were conducted in my program match the theoretical 500 searches that should happen. In the successful binary search, my program was able to go through 8 searches instead of the theoretical 9.97, which was actually further off from the theoretical value than my unsuccessful binary search, which went through 9 searches. Therefore, I do not think that the successful binary search is as accurately representative as it could be, because it is about 2 searches off from the theoretical. The successful search for the interpolation search was 3, and the theoretical was 3.32, so the successful interpolation search closely matches the theoretical number of searches that should be done for an interpolation search. For the unsuccessful linear search, I got a result of 512 searches, but my results often varied between 480-520 searches, which were not quite the theoretical 500 searches but within that vicinity. I was surprised to see that in my successful searches, the interpolation search result was 2 searches, being faster than the 3 from the successful search, but this 2 was further off from the theoretical number of searches that occur in the interpolation search. The 9 searches for the unsuccessful binary search are pretty close to matching the theoretical 9.97.