

NAME: Sharun Kumar Kakkad Sasikumar

NUID: 002774079

Task:

To solve 3-SUM using the Quadrithmic, Quadratic, and QuadraticWithCalipers approaches

Explanation as to why the Quadratic Method works:

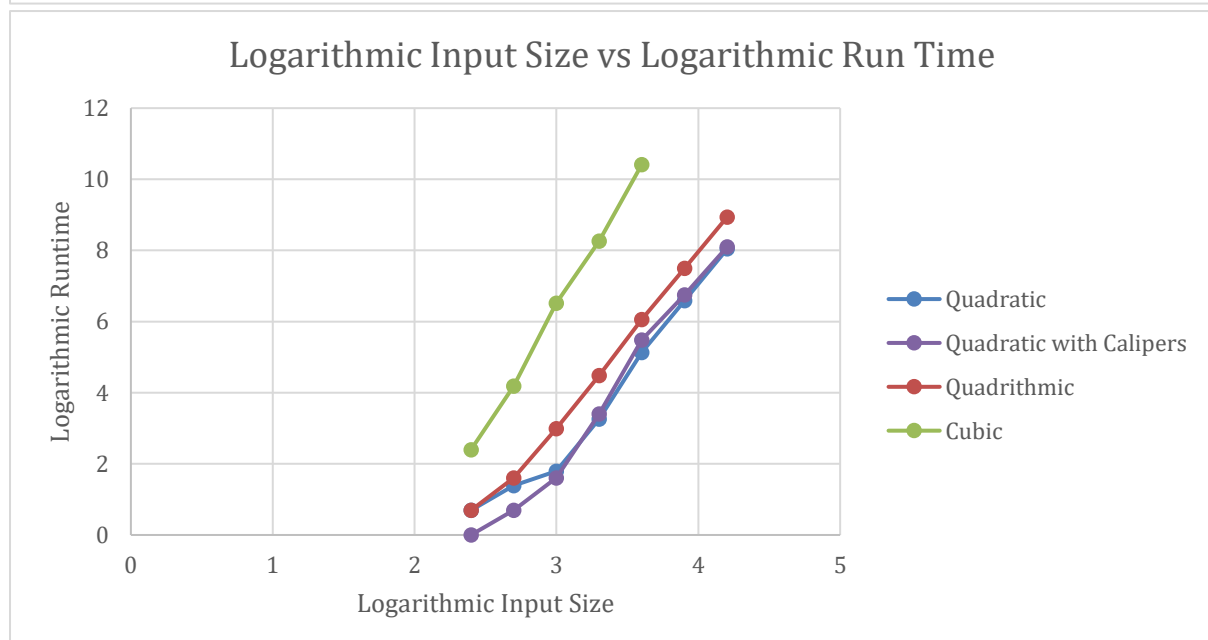
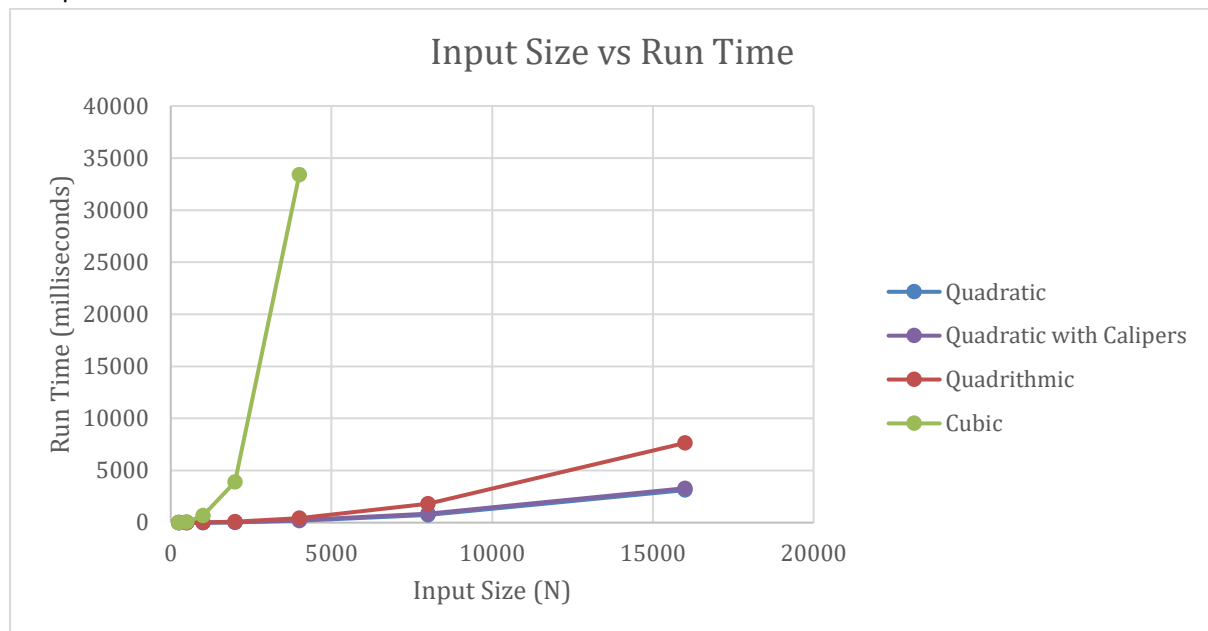
The two-pointer algorithm used in the Quadratic Method is more efficient than using a binary search to find triplets in an array because it has a linear time complexity of $O(n^2)$ while a binary search has an average and worst-case time complexity of $O(n \log(n))$. The two-pointer algorithm works by first sorting the input array and then using two pointers to find the other two elements that sum up to the target value, while doing a binary search for each element in the array would require multiple $\log(n)$ searches, resulting in a slower time complexity of $O(n \log^2(n))$

Code:

Submitted to GitHub Repository: <https://github.com/sharunkumar-ks/INFO6205/pull/1/files>

Graphical Representation:

Complete data is available in the **3-SUM.xlsx** file.



Unit Test Screenshots:

