COMP 352- Data Structure & Algorithms
Assignment 1

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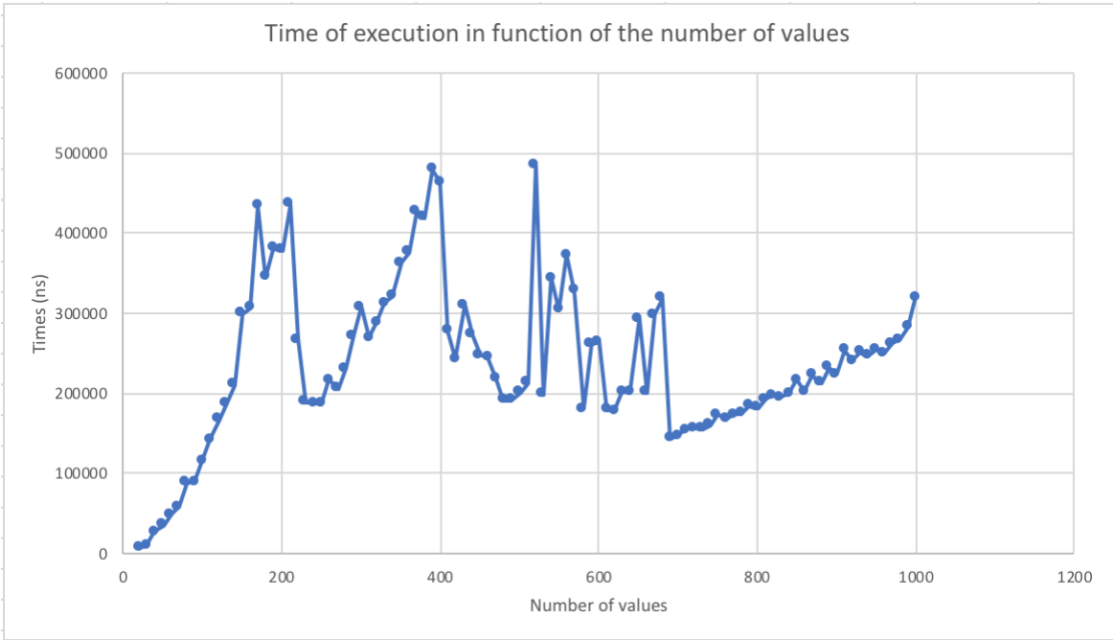

Figure 1: Times of execution in function of the number of values

Question 2: The algorithm iterates through the size of the array, so n values, and is composed of the search algorithm and the shift algorithm that also iterate through n values, so the average case complexity is $\theta(n*(n+n))= \theta(n^2)$. This behavior is also observed on the graph above.

Question 3: The current algorithm uses linear search which has a worst-case complexity of O(n) while it is O(logn) for the binary search algorithm. However, since the insertion sort algorithm must still perform a shift of array values for n values n times , the worst-case complexity is unchanged at $O(n^2)$.