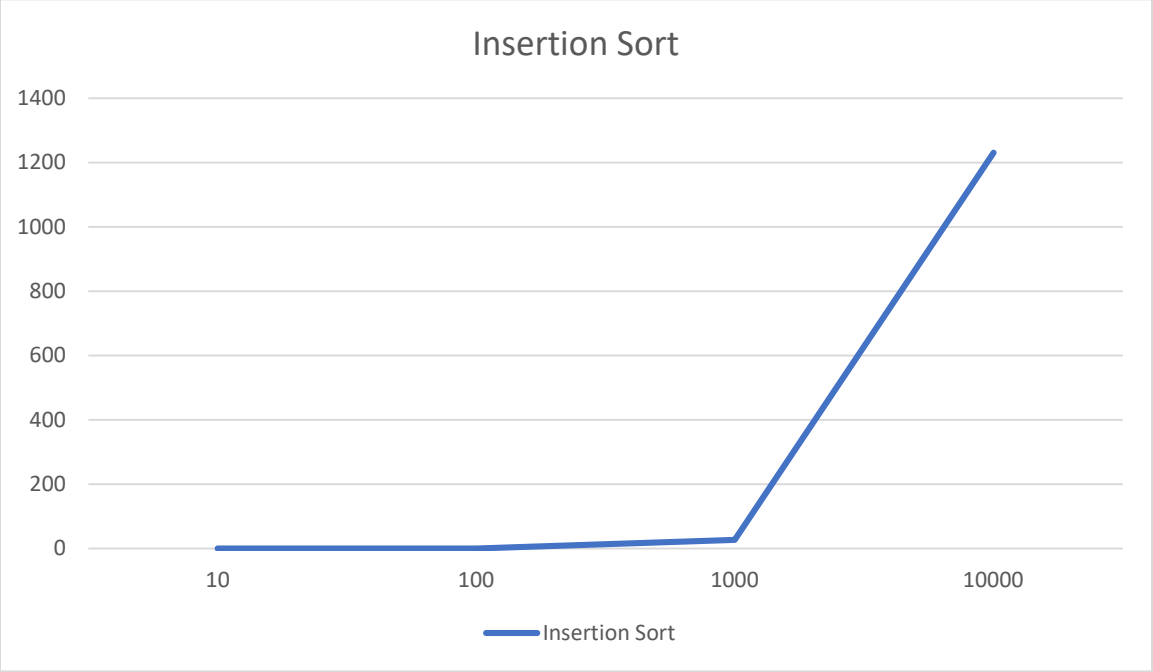
Insertion Sort

Average time for Insertion Sort of length 10 is 0.0022 milliseconds

Average time for Insertion Sort of length 100 is 0.1199 milliseconds

Average time for Insertion Sort of length 1000 is 26.5336 milliseconds

Average time for Insertion Sort of length 10000 is 1231.7 milliseconds



Faster for Small N

Theoretical Time Complexity: $O(n^2)$

Since there is an average increment of about 1000 times when the size of input is increased by 10, the time complexity is $O(n^2)$ holds true

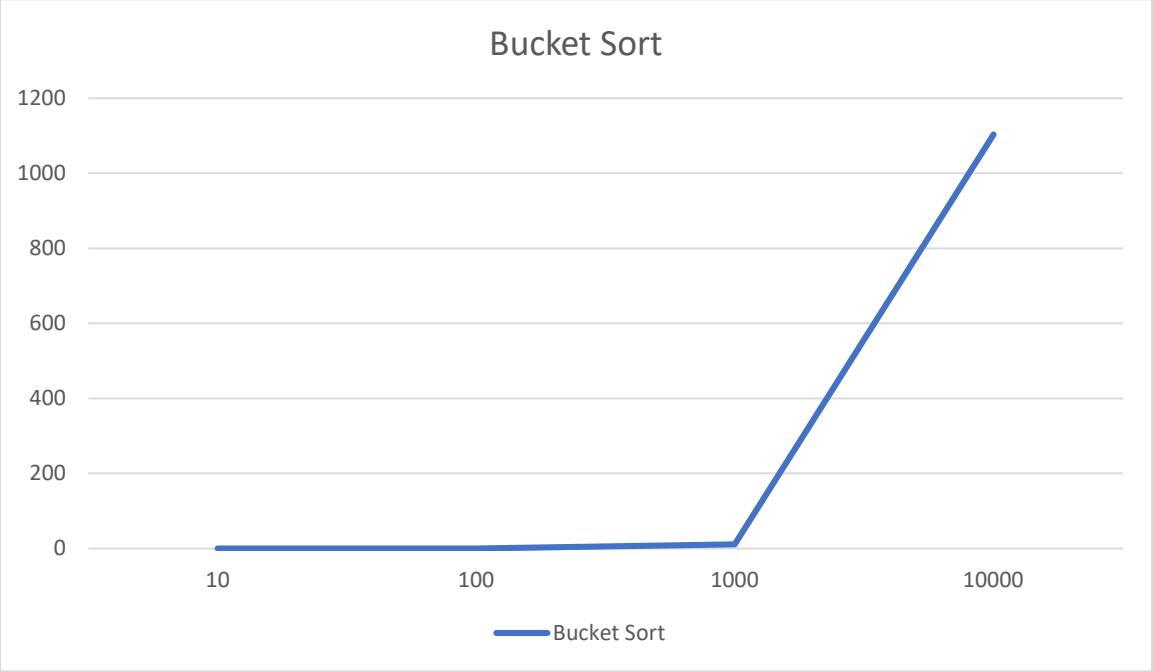
Bucket Sort

Average time for Bucket Sort of length 10 is 0.0375 milliseconds

Average time for Bucket Sort of length 100 is 0.3695 milliseconds

Average time for Bucket Sort of length 1000 is 11.0492 milliseconds

Average time for Bucket Sort of length 10000 is 1104.06 milliseconds



Theoretical Time Complexity: $O(n^2)$

Since there is an average increment of about 1000 times when the size of input is increased by 10, the time complexity is $O(n^2)$ holds true

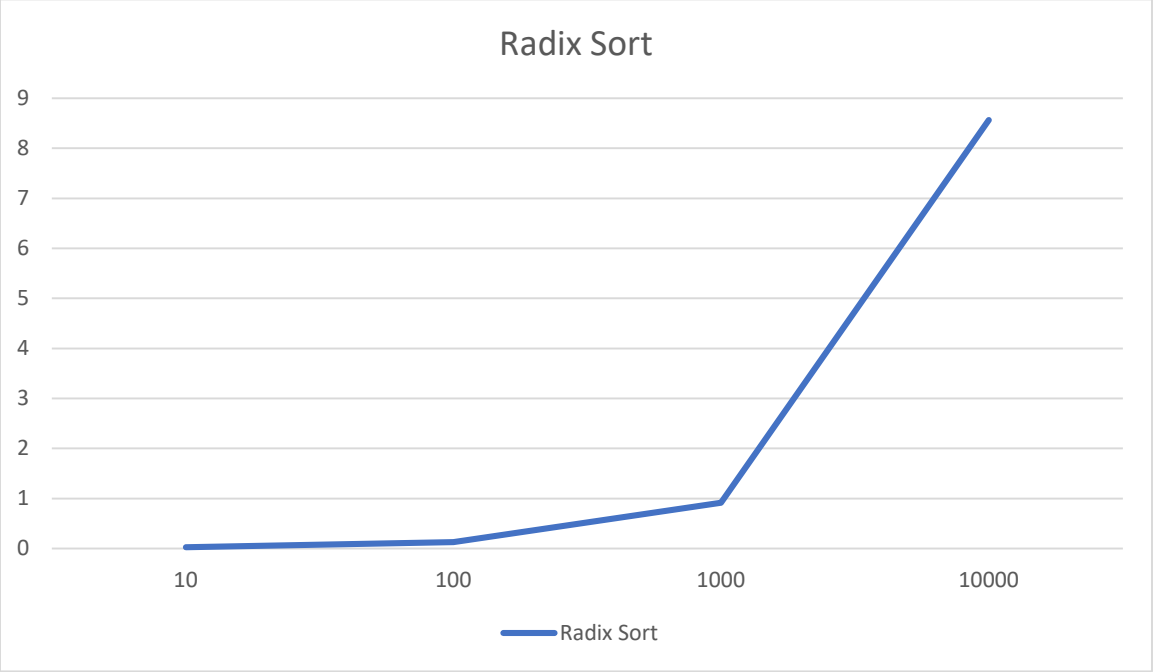
Radix Sort

Average time for Radix Sort of length 10 is 0.028 milliseconds

Average time for Radix Sort of length 100 is 0.1281 milliseconds

Average time for Radix Sort of length 1000 is 0.9163 milliseconds

Average time for Radix Sort of length 10000 is 8.5703 milliseconds



Faster for Large N

Theoretical Time Complexity: O(kn) – k = number of digits

Since there is an average increment of 10 times when the size of input is increased by 10 and the digit is increased by 1 the time complexity is O(k * n) holds true.