Output_ex3

Time taken to create a list with random numbers and time taken to sort the list

Legend: Create list, sort list

X-axis values: 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024

Y-axis values: 0.00E+00, 2.00E-02, 4.00E-02, 6.00E-02, 8.00E-02, 1.00E-01, 1.20E-01
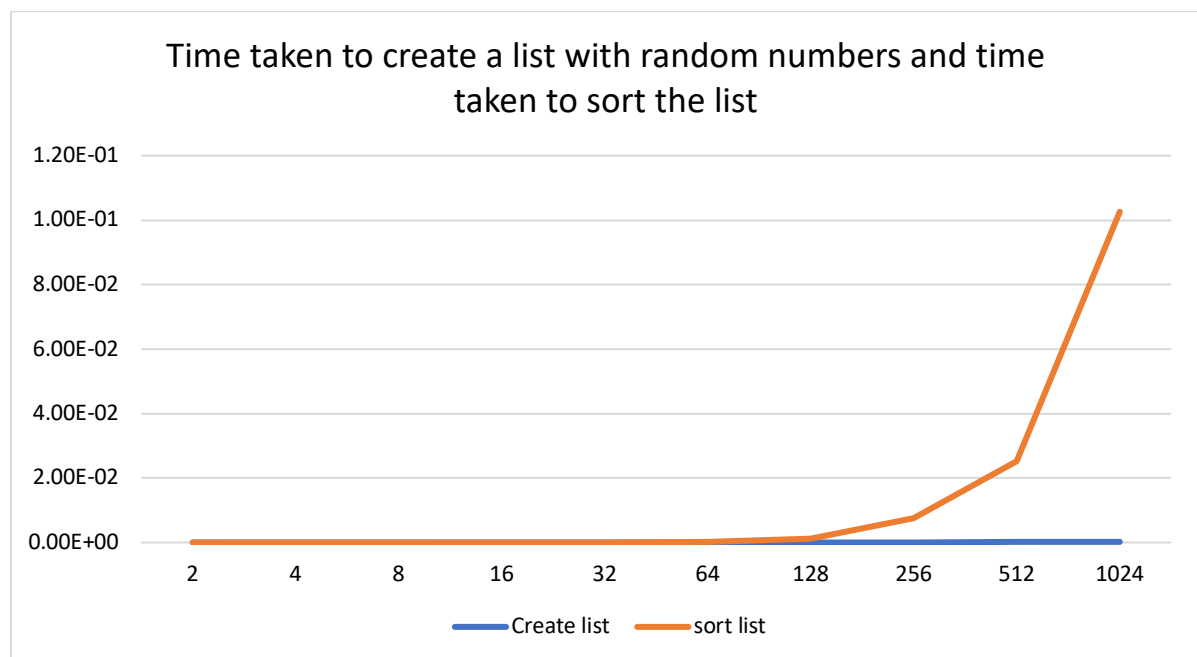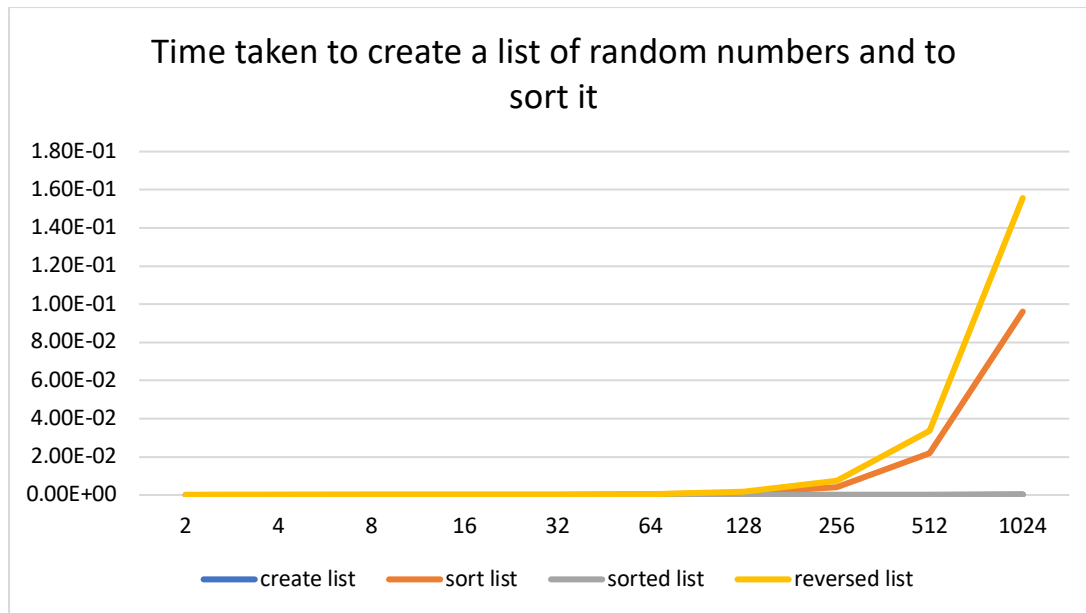
The graph above shows us the time taken to create a list of random numbers and to sort the list through shaker sort. The time taken to create a list of random number is faster than the time to sort the list.

As the size of the list increases, the time taken to create the list is longer, however in this graph, as the time it takes to sort the list requires more time to execute compared to creating the list and so the graph looks constant. However, its time complexity is $O(n^2)$

The shape of the graph to sort the list increases drastically over time as the list gets bigger and bigger over time. The time complexity of the shaker sort is also $O(n^2)$.

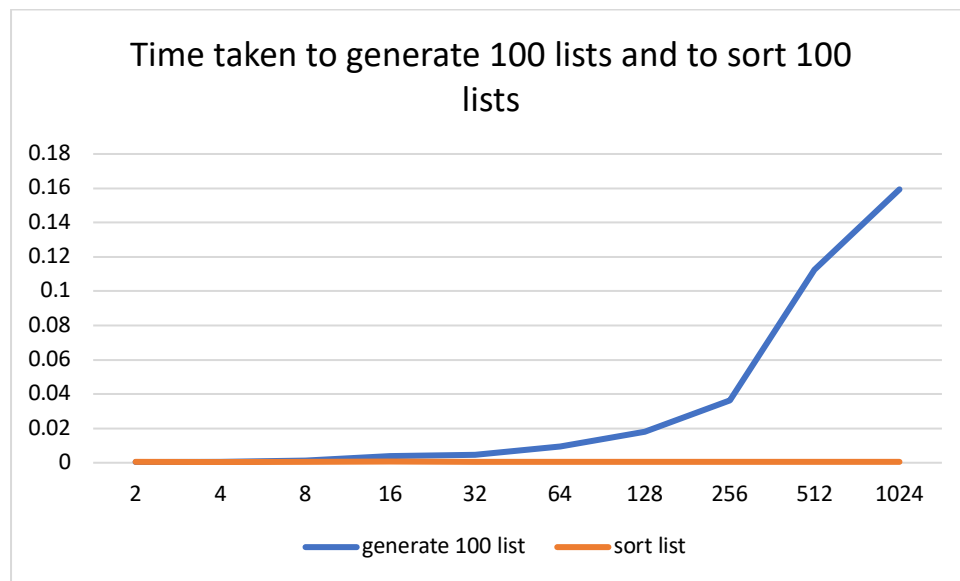**Time taken to create a list of random numbers and to sort it**

The graph above shows us the time taken to create a list of random numbers and to sort the list through shaker sort, sort a sorted list and a reversed list . The time taken to create a list of random number is faster than the time to sort the list, sort the sorted list and the reversed list.

As the size of the list increases, the time taken to create the list is longer, however in this graph, as the time it takes to sort the list requires more time to execute compared to creating the list and so the graph looks constant. However, its time complexity is $O(n^2)$

The shape of the graph to sort the list increases drastically over time as the list gets bigger and bigger over time. The time complexity of the shaker sort is also $O(n^2)$.

The time taken to sort the sorted list is shorter because the list is already sorted and the time taken to sort the reversed list is longer because the whole list needs to be sorted.

Output_ex3_avg

Time taken to generate 100 lists and to sort 100 lists

0.18	
0.16	
0.14	
0.12	
0.1	
0.08	
0.06	
0.04	
0.02	
0	

2   4   8   16   32   64   128   256   512   1024

━━━ generate 100 list   ━━━ sort list

The graph above shows us the time taken to create a list of 100 list and to sort the list through shaker sort. The time taken to create a list 100 list of random number of number length n is slower than the time to sort the list.

As the size of the list increases, the time taken to create the list is longer. This is because this is a list of 100 list of random number of number length n.

The shape of the graph to sort the list increases drastically over time as the list gets bigger and bigger over time. However it requires more time to create a list of 100 list of random number of number length n and so the shape of the graph to sort the list looks constant. The time complexity to sort the list is $O(n^2)$.