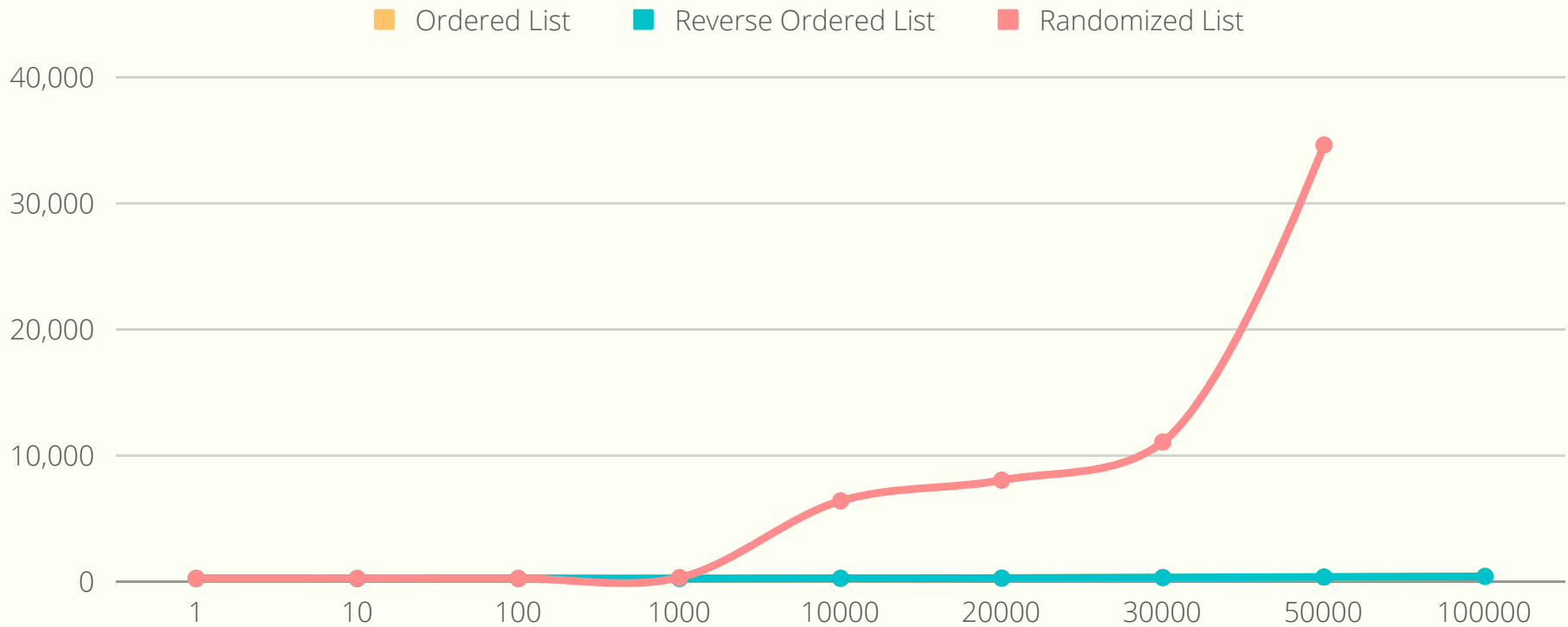


Insertion Sort



Ordered List

There is a slow steady increase with the ordered list moving from 250 ms to 420 ms, showing that Insertion Sort functions perfectly for sorting an already sorted list.

Reverse Ordered List

The reverse ordered list can also see the similar pattern displayed by the ordered list, it can be sorted without much trouble.

Randomized List

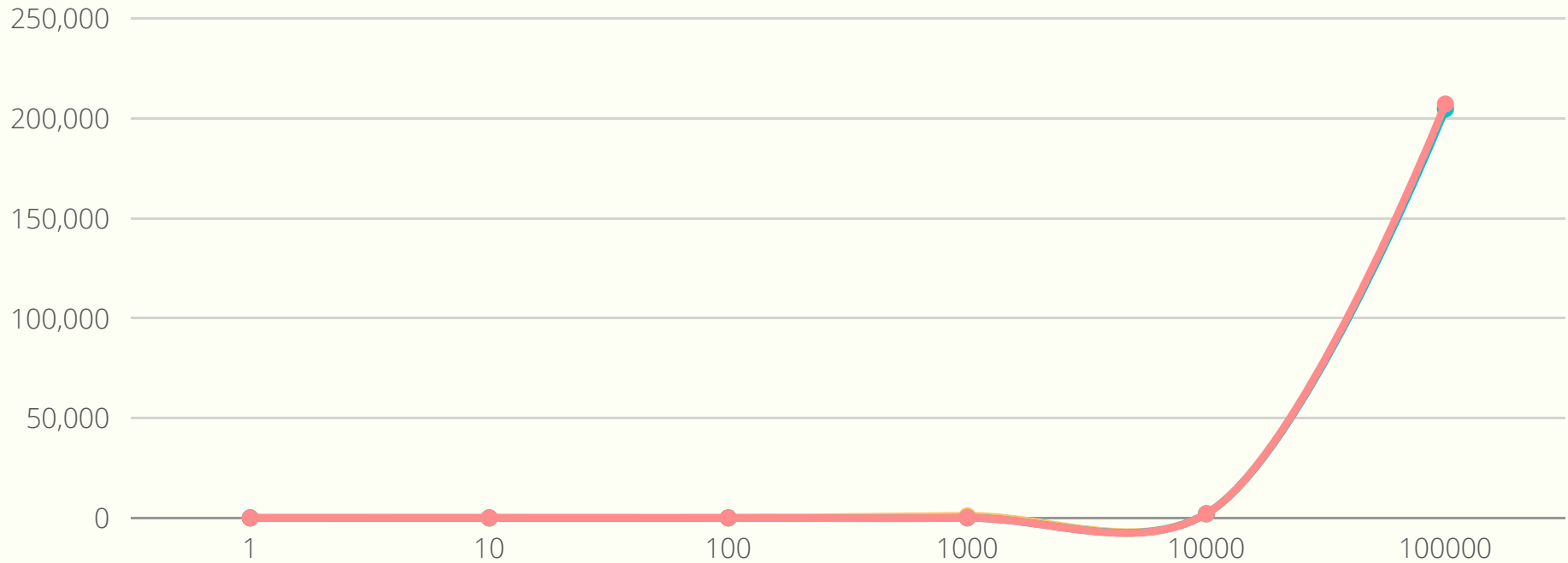
Even though the Insertion Sort works great for randomized list at a small amount of quantity, it will start to take higher amount of time to process the higher number of words in a randomized list.

Conclusion:

Insertion sort works very well for a lower amount of words but once it reaches a higher amount of words, it would start to take a lot more time than expected, this is mainly due to having to repeat the process of finding the smallest/most alphabetically forward word every time a word is sorted.

Selection Sort

Ordered List Reverse Ordered List Randomized List



Ordered List

There is a slow steady increase with the ordered list between 1 word and 10,000 words, however there is a extreme rise in sort time after 10,000, showing its limitation for fast sorting.

Reverse Ordered List

The reverse ordered list can also see the similar pattern displayed by the ordered list, it can be sorted without much trouble between 1-10,000 word.

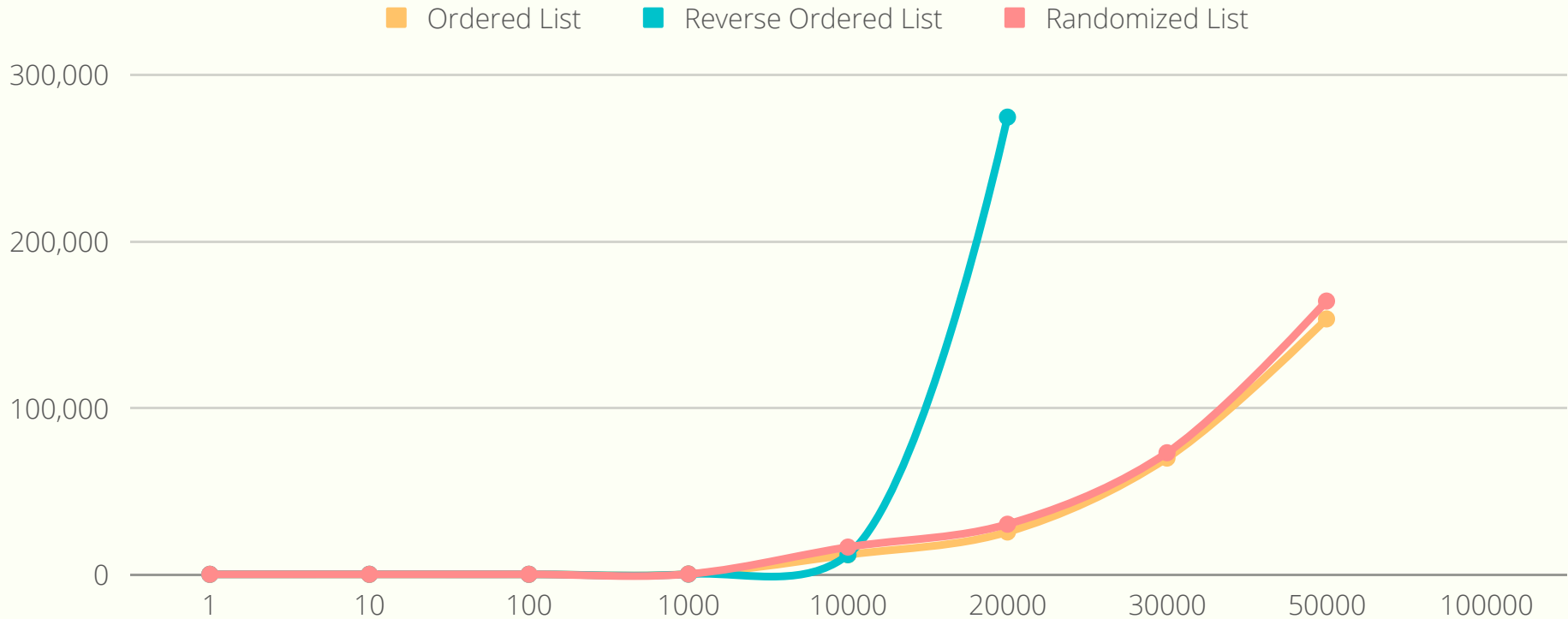
Randomized List

Compared to Insertion Sort, Selection Sort was able to handle a randomized list in a similar manner as a ordered list and a reverse ordered list, meaning that it is able to handle most type of lists relatively well, unlike insertion sort, which relies on presorted patterns.

Conclusion:

Selection Sort displays a similar pattern between all three types of lists, showing that it is much more versatile and can combat more random lists compared to Insertion Sort. However, there is a sharp rise in time taken to sort between 10000 and 100,000 words as it does display its limitation in the ability to sort larger word banks.

Bubble Sort



Ordered List

There is an exponential increase in amount of time to sort the ordered list, and it is able to sort through the list without much trouble between 1-50,000 words sorting.

Reverse Ordered List

The reverse ordered list time stands out compared to the other two due to the nature of the bubble sort, having the whole list reversed means that every single sub-sort the algorithm has to do is the maximum amount it can potentially do.

Randomized List

The randomized list can also see the similar pattern displayed by the ordered list as it can be sorted without much trouble between 1-50,000

Conclusion:

Bubble Sort, similarly to Insertion Sort yet totally different, has more trouble dealing with a more extreme end of ordering. The Bubble Sort appearing on the graph above shows a clear slowing down in sorting due to the whole list being reversed. They take more time dealing with lists that are more extremely unsorted due to the process of sorting one by one and combining the smaller divisions and resorting again. They also have a limitation between 20,000 and 30,000 words on the most extreme and between 50,000 and 100,000 on the more normal cases on our testing platform due to our own limitation of not being able to run a program pass 300,000 ms.