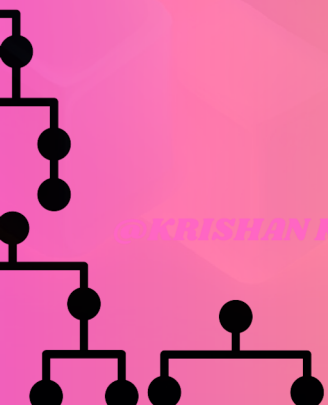
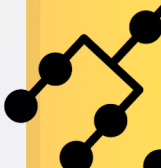
Data Structure & Algorithm

Insertion sorting





Insertion Sorting/ Online Sorting

whenever you have incoming stream of data and regularly data coming in and you want to keep that data in sorted order. Insertion sort becames very handy.

For ex → Zoom chat ↴

arrange the chat → Based on students name

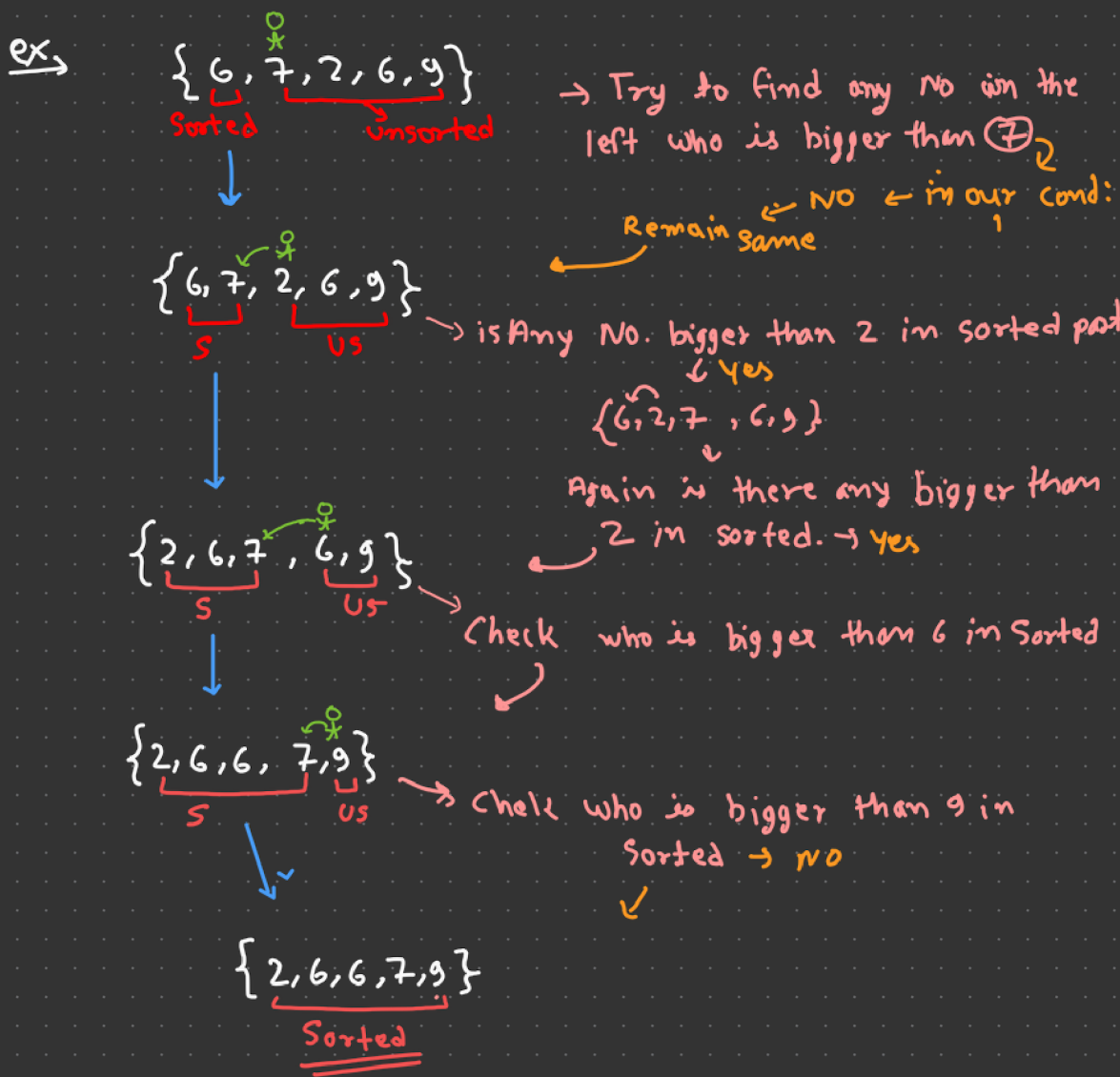
Algorithm that being used

insertion sort

definition:- Insertion Sort builds the sorted part of the list by repeatedly picking elements from the unsorted part and inserting them in the correct position within the sorted part.

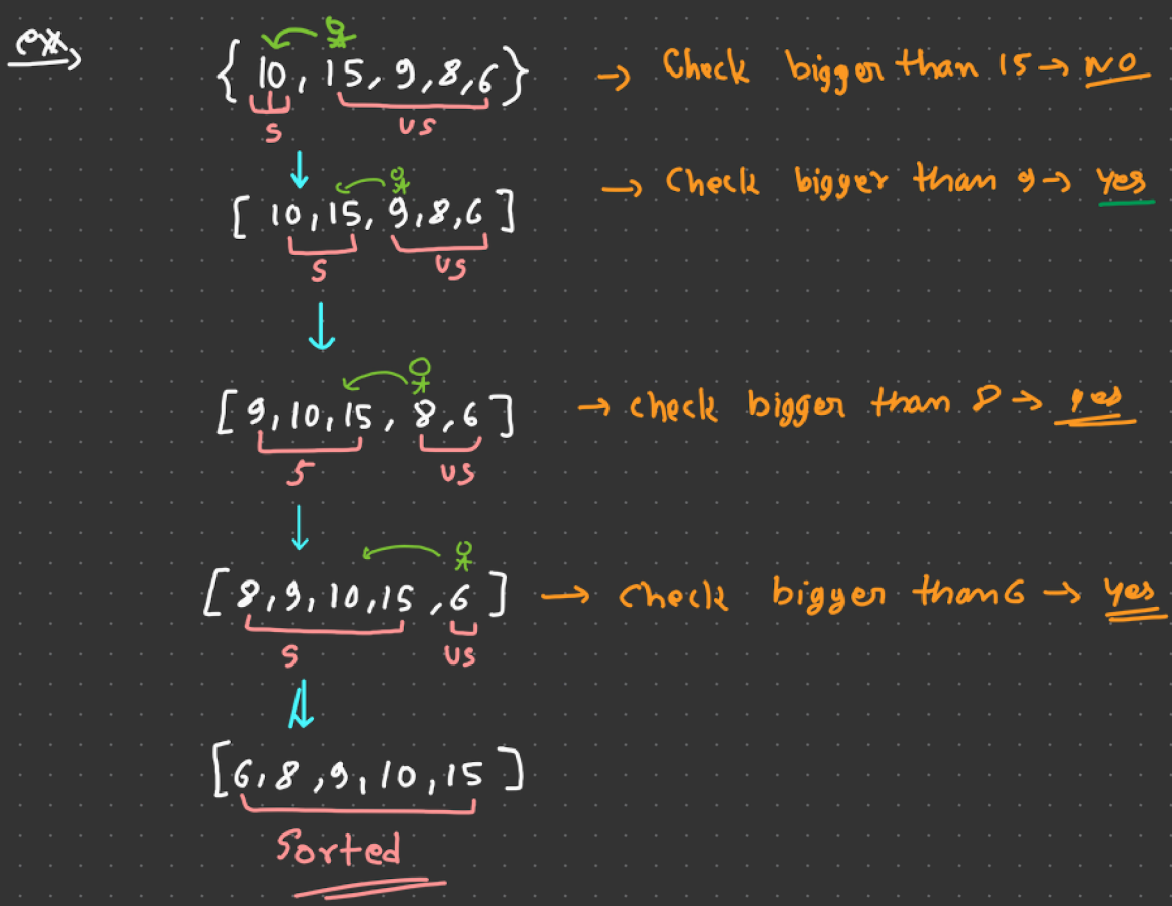
It is much less efficient on large list than more advanced algorithm such as quicksort, heapsort, mergesort, However it provide several advantages like :-

1. Simple implementation
2. Efficient for small data sets or nearly sorted.



Here we keep trying to inserting the element so that the array get sorted in spacific order

↳ Insertion / online sorting follow ⇒ Stable sorting



Code for insertion sort :

3. Online Sorting / insertion sort

```
def insertion_sort(arr):
    for i in range(1, len(arr)):
        v = arr[i]
        j = i
        while (j>= 1 and arr[j-1]> v):
            arr[j] = arr[j-1]
            j -= 1
            arr[j]=v
```