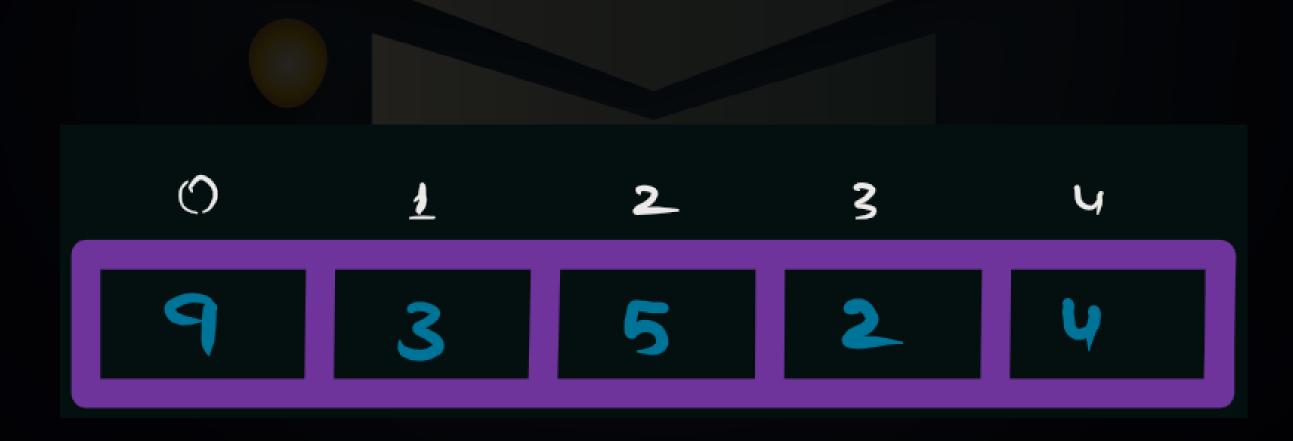# PYTHON

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INSERTION SORT

Insertion Sort

It's an algorithm to arrange an array in either ascending or descending order

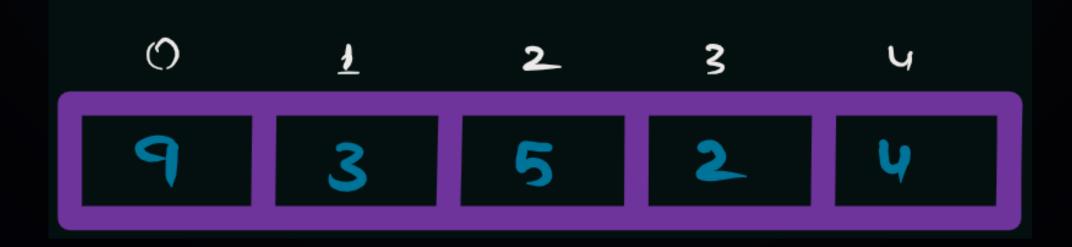# what is the difference between bubble sort and insertion sort

The main difference between bubble sort and insertion sort is that bubble sort performs sorting by checking the neighboring data elements and swapping them if they are in wrong order while insertion sort performs sorting by transferring one element to a partially sorted array at a time.

In Insertion Sort consider each element as a card. First Element is considered to be sorted and and then 2nd element is then moved towards the correct position.

0	1	2	3	4
9	3	5	2	4

There will be two loops one outer loop and one inner loop

Outer loop will be for loop which will check each element and the inner loop will be conditional while loop which will find the correct position of the element

```python
arrayData = [10, 5, 6, 7, 1, 12, 13, 15, 21, 8]


def InsertionSort():
    arraysize = 10


    for pointer in range(1, arraysize):
        valuetoinsert = arrayData[pointer]
        holeposition = pointer # 2


        while (holeposition > 0) and (arrayData[holeposition - 1] > valuetoinsert) :


            arrayData[holeposition] = arrayData[holeposition - 1]
            holeposition = holeposition - 1


        arrayData[holeposition] = valuetoinsert
```