Sorting → arranging elements in a particular order.

(algorithm)

→ Bubble Sort

→ Selection Sort

→ Insertion Sort

} $O(N^2)$

where N is the size of the array.

Bubble Sort : will compare two adjacent elements. (Swap).

0	1	2	3	4	5
6	9	4	8	3	1

Round 1.

0 5

6 9 4 8 3 1

6 4 9 8 3 1

6 4 8 9 3 1

6 4 8 3 9 1

6 4 8 3 1 9

one element at its accurate place.

Round 2.

0 4 5

6 4 8 3 1 9

4 6 8 3 1 9

4 6 3 8 1 9

4 6 3 1 8 9

Round 3.

0 3 5

4 6 3 1 8 9

4 3 6 1 8 9

4 3 1 6 8 9

Round 4.

0 2 5

4 3 1 6 8 9

3 4 1 6 8 9

3 1 4 6 8 9

Round 5.

0 1 5

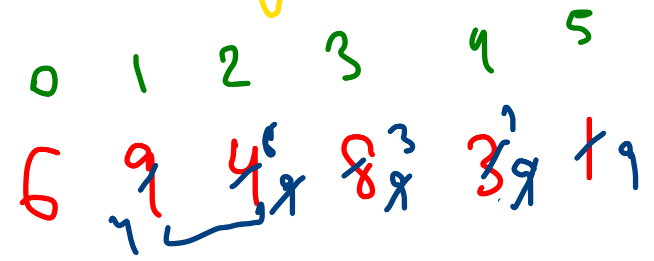
3 1 4 6 8 9

1	3	4	6	8	9

If arr size is n, then n-1 rounds are sufficient to sort the array.

→ j < n-1

→ j < n-i-1 (as the last elements are already sorted).



pseudo-code-

```
for(int i = 0; i < n-1; i++){
    for(int j = 0; j < n-i-1; j++){
        if (arr[j] > arr[j+1]){
            swap(j, j+1);
        }
    }
}
```

i = 0 < 5

j = 0 < 5

(6 > 9) F

j = 1 < 5 (9 > 4) T

j = 2 < 5 (9 > 8) T

j = 3 < 5 (9 > 3) T

j = 4 < 5 (9 > 1) T

j = 5 < 5 F