→ Sorting Algorithms ←

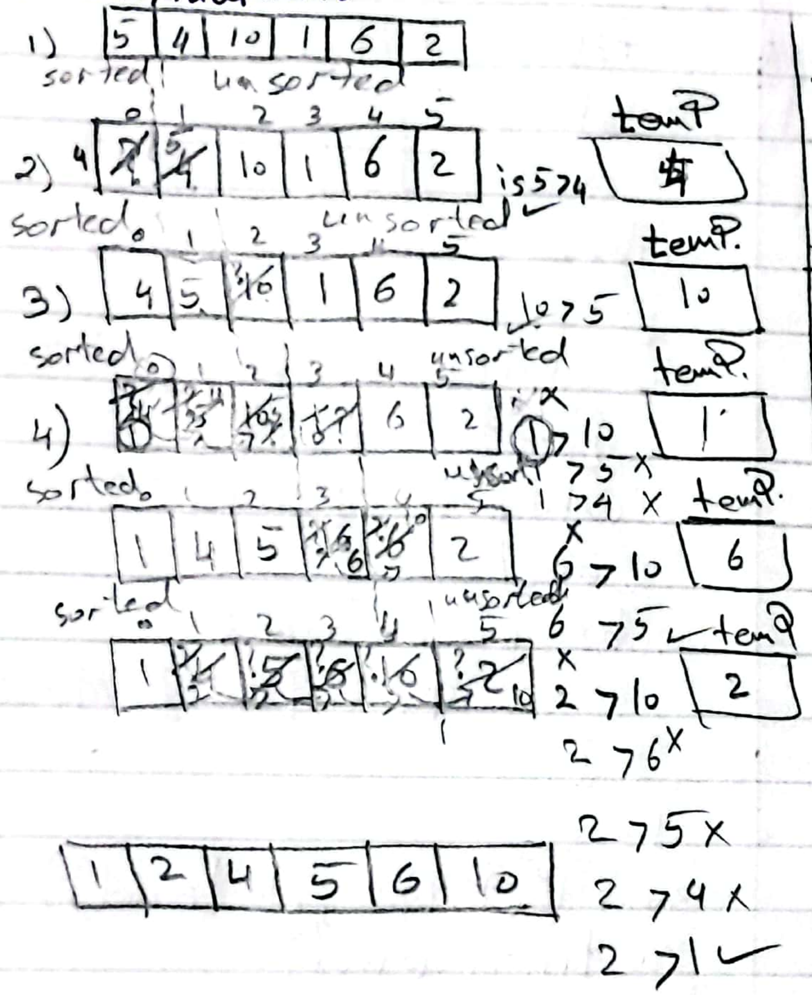
[I] Insertion sort

[$\Theta(n^2)$] → لو ال arr معكوس
فا لو الهمشي عليه مرتب

1) Is destructive?? → Yes; because it overwrites the input Data structure during excution

2) Is in Place?? → Yes; as it doesn't need any extra Place in memory.

* Intiuation.



* code.

→ we have two Loops
1) increment (unsorted)
2) decrement (sorted)

```
f(i=1; i<n; i++)
{
    temp = a[i];
    j = i-1;
    while( j >= 0 && a[j] > tem
    {
        a[j+1] = a[j];
        j--;
    }
    a[j+1] = temp;
}
```