INSERTION SORT ALGORITHM

Why the name Insertion ?

- **Insert** the element at the **sorted position** in an array
- **Insertion means :**

  Inserting an element in a sorted array **at a sorted position**.

How Element is Inserted in Sorted Position in an Array?

1. Start **comparing the key** with **array elements** from **0^{th}** index to **$(n-1)^{th}$** index .
2. If the correct position is found in array, for inserting the **key element** in the sorted array

   make free space available at sorted index, this can be done by **shifting of element** on right - hand side of the array.
3. Then **insert key element at sorted position**.

INSERTION SORT MADE EASY :

- In previous approach we have to :
  - First find out where **key element should be inserted**
  - Then **shifting of elements** for making free space for key element.
  - Finally insert the key-element in the sorted position.
- In Insertion Sort :
  - You don’t have to find out where the key element should come
  - Directly you can start shifting the elements. (You don’t need to find its position)

INTUITION BEHIND THE INSERTION SORT

Input-Array : **Insert(12)** at sorted position

0	1	2	3	4	5	6	7
2	6	10	15	20	25	30	

Working Of Insertion Sort

0	1	2	3	4	5	6	7
2	6	10	15	20	25	30	

Idea: