INSERTION SORT Imagine, the list is as follows 20 35 -15 7 55 1 -22 · Sorted partition > First Unsorted Index = 1; this is the first index of the unsorted partition or of body orbin & el L + 1 = 0; Variable used to traverse the sorted partition from rebedocaids right to left some -) new Element = 35 - the Value we want to insert into the Sorted partition [first Unsorted Index] 20 435; Insert 35 into sorted partition. 80 35 -15 7 55 1 -98 -) First Unsorted Index = 2, this is the first index of the Unsorted partition of to make the text and + 1=1; Variable used to traverse the sorted partition from secondary right to det 65402 I new Element = -15 - the value we want to insert into the sorted partition [first Unsorted Index]. -15/35; Shift 35 to the right 30 35 35 7 55 1 - 22 10 20 35 7 55 N -22 -15 20 35 7 55 N -82 I First Unsorted Index = 3 - this is the first index of the Sorted Partition 1 1=2 - index used to traverse the sorted partition from too to left to left I new Element = 7 - the Value we want to insert into sorted partition [first Unsorted Index)

-15 80 35 35 505 11 131 -28 900000 -15 20 30 35 55 1 -22 -15 7 20 35 55 11-22 -> First Unsorted Partition = 4; This is the first inden of Unsorted Partitions were text y 1=3; index used to traverse the sorted partition from the right to left

new Element = 55 the element we want to insert into the sorted partition 35 < 55; therefore directly insert into Sorted partition of the 28 treent (284 08 -15 7 20 35 1552 17 -99 28 08 Index
I coss First Unsorted Pordition - 5; This is the first index of Unsorted partition of of i= 4; index used to traverse the Sorted partition from right to lett mon - new Element = 111 the element we and want to insert into the sorted of Partition

-15 7 20 35 55 55 -20 -22

-15 7 20 35 35 55 -20 -22

-15 7 20 30 35 55 -20 -22

-15 7 20 35 55 -20 -22

-15 7 20 35 55 -20 -22

-15 7 20 35 55 -20 -22

-15 7 20 35 55 -20 -22 + 1= & - index used to traverse the sorted partition HON to their begar as about month insert into sorted partition [first Unsorred Index)

-	First Unsorted Index = 6; This is the first
	index of Unsorted Partition
	i=5; index used to traverse the
	Sorted partition from right to lett
-	Sorted partition from right to lett new Element = - 23, the element we want to
	insert into the sorted partition
	-22×4355077 otob 911 +391103 07 1
	venoue these comments
	-15 127 120 0035 515 WT 22 +ni
(-15 21 7 nand 35 55 55 55 m-29
Ca hos	1-15-167-90-35 135 1550-22
	-15 1 7 20 20 35 55 798
	-15 2119 7 7 103 80 ml 135 tu 5 59 12 12 89
	-15 1 7 (200) 35 55 (32)
	[-15] -15 1 7 20 35 55 +22
	-22 -15 (1+07-4189 (20) 35 [1) 155
	£ 1
	All the elements have been sorted.
	11 Hard - Coding
(E)	In- place Algorithmes = Duomo +ni
)	O(n2) to Ovadratic time complexity
-	It takes 100 steps to sort 10 elements
	10,000 steps sto some sort 100 elements
TE 63	Stable (Algorithmero > resolberosultaria)
	6
SOUTH	int new Element = array [First Upsorte
	17401
	for (1 = First Unsorted Trotex) 1>0 &&
	(1 ; +09m9/3w9r/ < [1-1) worro

```
Insertion Sort Implementation?
     import java vtil Scanner; Mabril 2=1
     class InsertionSort & moitimg between
     Public Static Void main (String [] args) &
      11 corrections of dataset offi tream
      11 to collect the data from user, 8
     remove these comments
         int array [] = new int [10];
     Scanner in = new Scanner (System in)
     System out println ("Enter the size of array");
     eint n = in nextIn+();
     for (int i=0; izn; i++)
        array[i] = in nextIn+();
      " All the elements have been sorter
     11 Hard - coding
     int array [] = $80, 35, -15, 7,55, -1, -893;
Il For insertion sort theory reter to
stranginger+1000 SOX+ motes of 29 your for
    for (int First Unsorted Index = 1)
     First Unsorted Index < array length -1; First Unsorted Indext
     2
        int new Element = array [First Unsorted Index]
        ini
        for (i=First Unsorted Index; 1>0 &&
       array(i-1] > new Element; 1
```

array[i] = array[i-1];

array[i] = new Element;

for lint * element : array)

{

System · out · println (element);

}