*Count Sort :-

Input Array :-

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
arr :-	9	6	3	5	3	4	3	9	6	4	6	5	8	9	9

- Find max & min

  max = 9

  min = 3

  ∴ Range = max - min = 9 - 3 = 6.

countsort (int[] arr, int min, int max)

* make freq. array

initially farr ⇒ (Range = 9 - 3 + 1 ⇒ 7 (0 to 6)

	0	1	2	3	4	5	6
farr	0	0	0	0	0	0	0

```
for(int i=0 ; i<arr.length ; i++)
    farr [arr [i] - min]++ ;
```

	0	1	2	3	4	5	6
farr :	0	0	0	0	0	0	0
i=0; arr[0]-3= =9-3=6							1
i=1				1			
i=2	1						
i=3			1				
i=4		1					
i=5	2						

		0	1	2	3	4	5	6
	farr :-	~~2~~	X	1	X	0	0	X
✓	i = 6	3						
✓	i = 7							~~2~~
✓	i = 8				~~2~~			
✓	i = 9		2					
✓	i = 10				3			
✓	i = 11			2				
✓	i = 12						1	
	i = 13							~~3~~
	i = 14							4

⇓

∴ farr becomes

	0	1	2	3	4	5	6
farr →	3	2	2	3	0	1	4
	↓	↓ 4	↓ 5	↓ 6	↓ 7	↓ 8	↓ 9

Represents 3

* **Make prefix sum Array :-**

```
for(int i = 1 ; i<farr.length ; i++
    farr[i] = farr[i] + farr[i-1]
```

farr becomes

	0	1	2	3	4	5	6
farr →	3	5	7	10	10	11	15

farr :

0	1	2	3	4	5	6
3	5	7	10	10	11	15

Create new Ans array

∴ filling 'ans' array from end of arr[]. (given arr).

given arr :-

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
arr →	9	6	3	5	3	4	3	9	5	4	6	5	8	9	9

```
for(int i = arr.length-1; i>=0 ; i--)
    int pos = farr[arr[i] - min] -1 ;
    ans[pos] = arr[i];
    farr[arr[i]-min]--;
```

Eg: for i = 14

int pos = farr[arr[14] - 3] -1 ⇒ farr[9-3] -1

farr[6] -1 = 14.

ans[14] = arr[14]

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
ans →															9

farr[arr[i]-min]-- ; ⇒ farr[6]--

15-- ⇒ 14

	0	1	2	3	4	5	6
farr →	3	5	7	10	10	11	~~14~~ 13 12

ans array.

	0(3)	1(4)	2(5)	3(6)	4(7)	5(8)	6(9)
farr →	~~3~~	~~5~~	~~7~~	~~12~~	10	~~11~~	~~14~~
i=13							~~13~~
i=12						10	
i=11			~~6~~				
i=10				~~9~~			
i=9		~~4~~					
i=8				~~8~~			
i=7							~~12~~
i=6	~~2~~						
i=5		3					
i=4	~~1~~						
i=3			5				
i=2	0						
i=1				7			
i=0							11

final ans array becomes :-

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
ans →	3	3	3	4	4	5	5	6	6	6	9	9	9	9	9