Algo Bucket Sort

1

int range = Max Element - Min Element

2

```
// Baskets should be choosen wisely if we
// take a lot of baskets lets say 10
// for 20 elements, we waste our
// time in combining them
// A good idea is to go with
// square root of Range or close
// to it.
```

3

int bucketRange = Range / Baskets

4 // create bucket Array Linked List

5 // Assign numbers from array to
// the proper bucket using
// hashing function

6 Sort Buckets

7 Merge Buckets

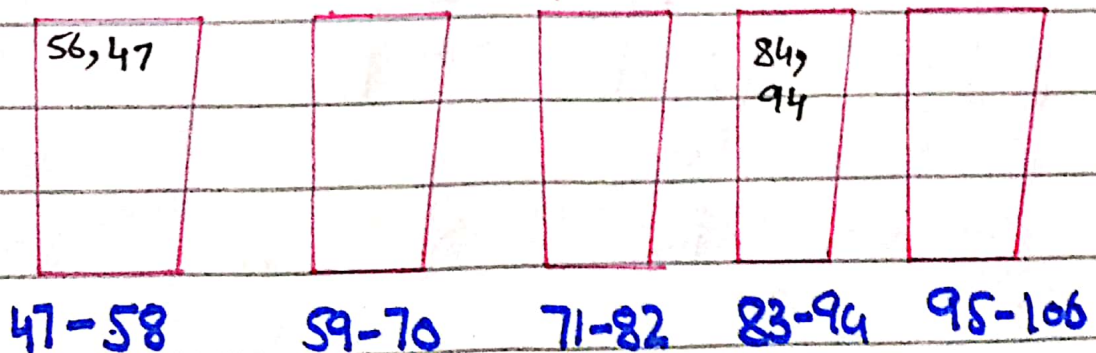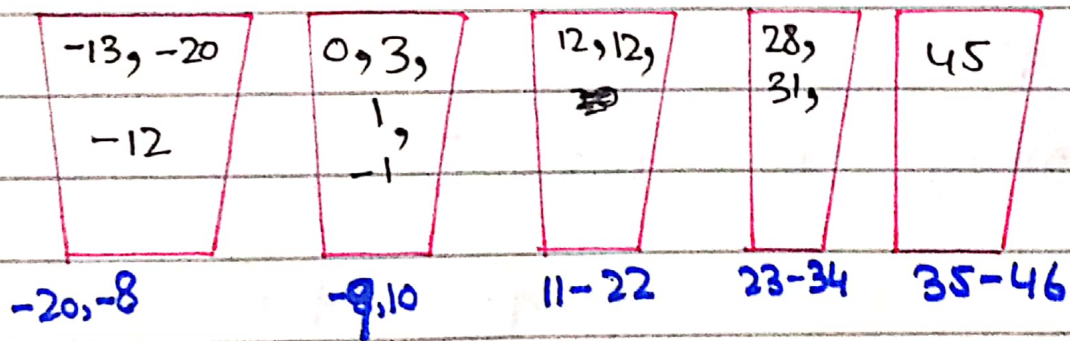Array = 56, 12, 84, 28, 0, -13, 47, 94, 31,
12, -20, 45, 3, 1, -12, -1

Max = 94   Min = -20

Range = 94 - (-20) = 114

Buckets = $\sqrt{114}$ = 10.67... ≈ 10

$$\frac{\text{Element}}{\text{Per Bucket}} = \frac{\text{Range}}{\text{Baskets}} = \frac{114}{10} = 11.4 \text{ elements} \approx 12$$
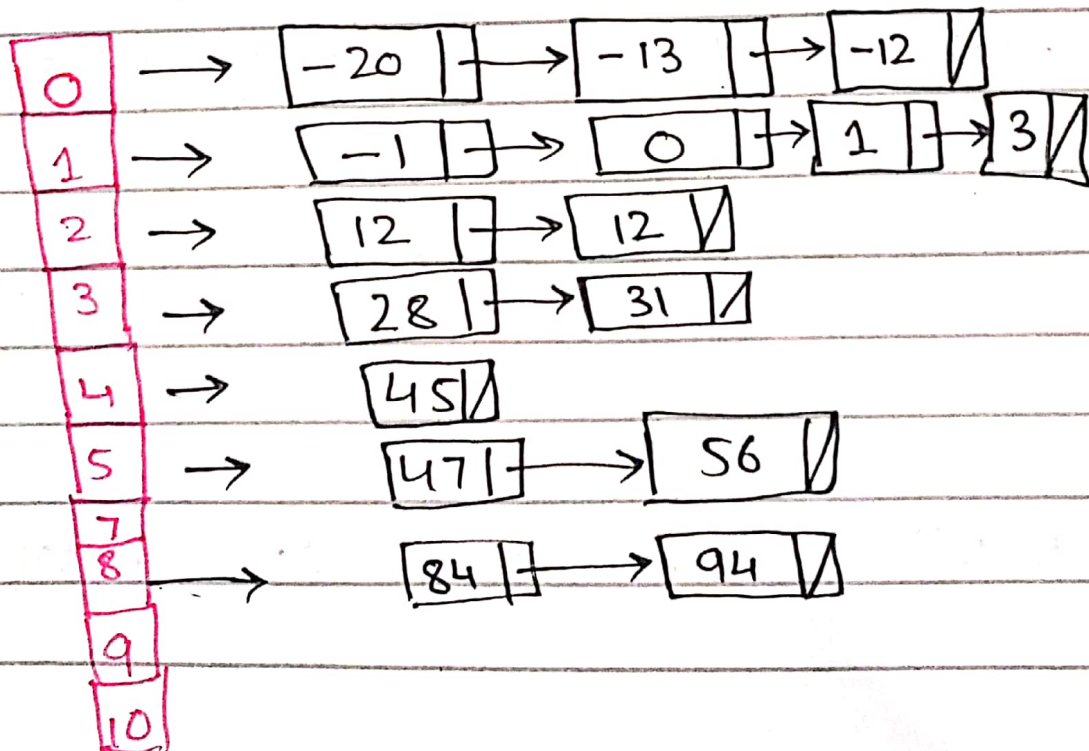
-13, -20	0, 3,	12, 12,	28,	45
-12	1, -1		31,	
-20, -8	-9, 10	11-22	23-34	35-46

| 56, 47 | | | 84, 94 | |
| 47-58 | 59-70 | 71-82 | 83-94 | 95-106 |

// 12 elements per basket

Basket

0	→ -13 → -20 → -12
1	→ 0 → 3 → 1 → -1
2	12 → 12
3	28 → 31
4	45
5	56 → 47
6	
7	
8	84 → 94
9	
10	

Sorting each buckets

0	→ -20 → -13 → -12
1	→ -1 → 0 → 1 → 3
2	→ 12 → 12
3	→ 28 → 31
4	→ 45
5	→ 47 → 56
7	
8	→ 84 → 94
9	
10	
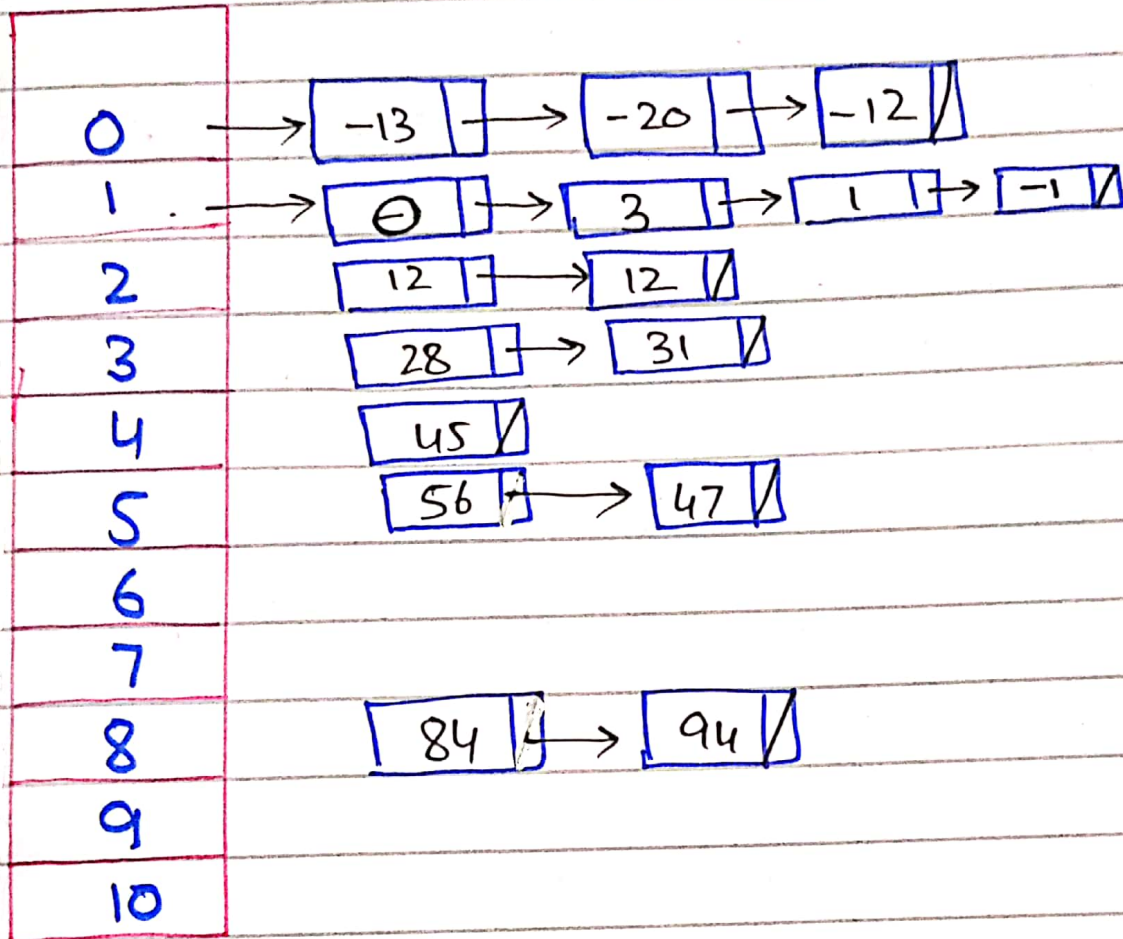
Merging the bucket values in 1 array

-20 , -13 , -12, -1, 0 , 1 , 3, 12, 12,
28 , 31 , 45, 47, 56, 84, 94