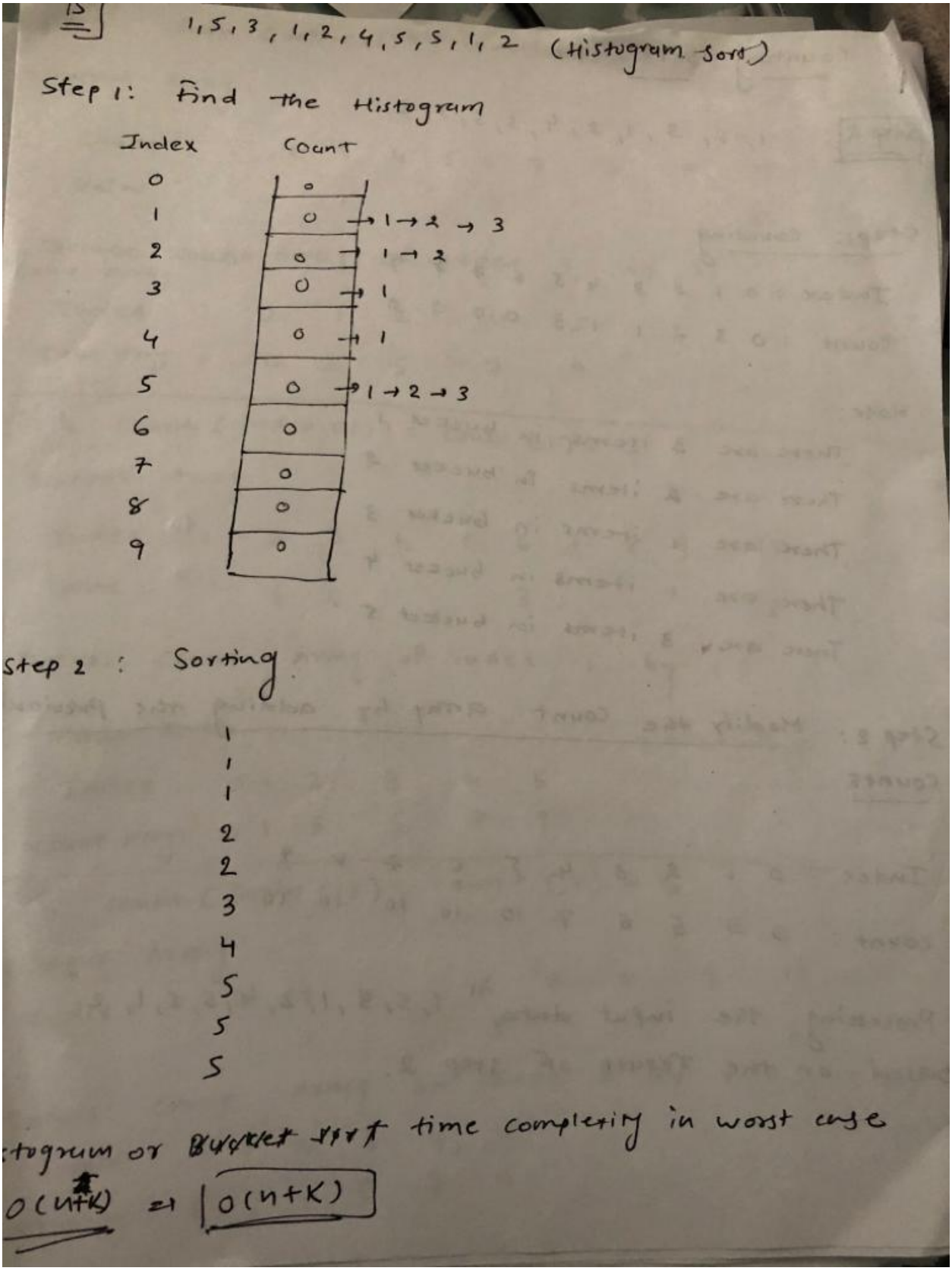
Cs501
Mansi Shah
(19526)
WEEK10 = Homework 10



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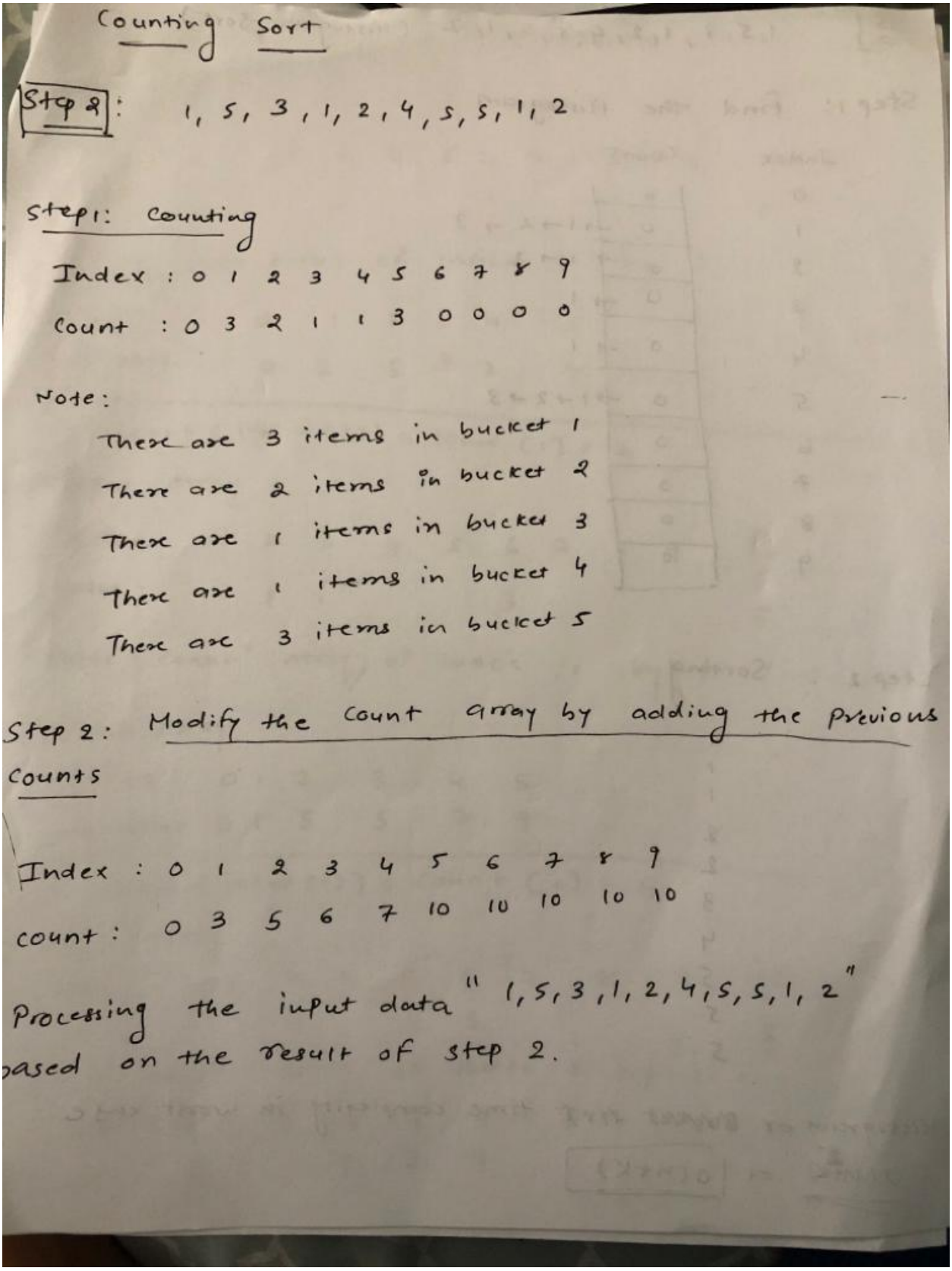

Counting Sort

Step 0: 1, 5, 3, 1, 2, 4, 5, 5, 1, 2

Step 1: Counting

Index	0	1	2	3	4	5	6	7	8	9
Count	0	3	2	1	1	3	0	0	0	0

Note:

There are 3 items in bucket 1
There are 2 items in bucket 2
There are 1 items in bucket 3
There are 1 items in bucket 4
There are 3 items in bucket 5

Step 2: Modify the count array by adding the previous counts

Index	0	1	2	3	4	5	6	7	8	9
count	0	3	5	6	7	10	10	10	10	10

Processing the input data "1, 5, 3, 1, 2, 4, 5, 5, 1, 2" based on the result of step 2.

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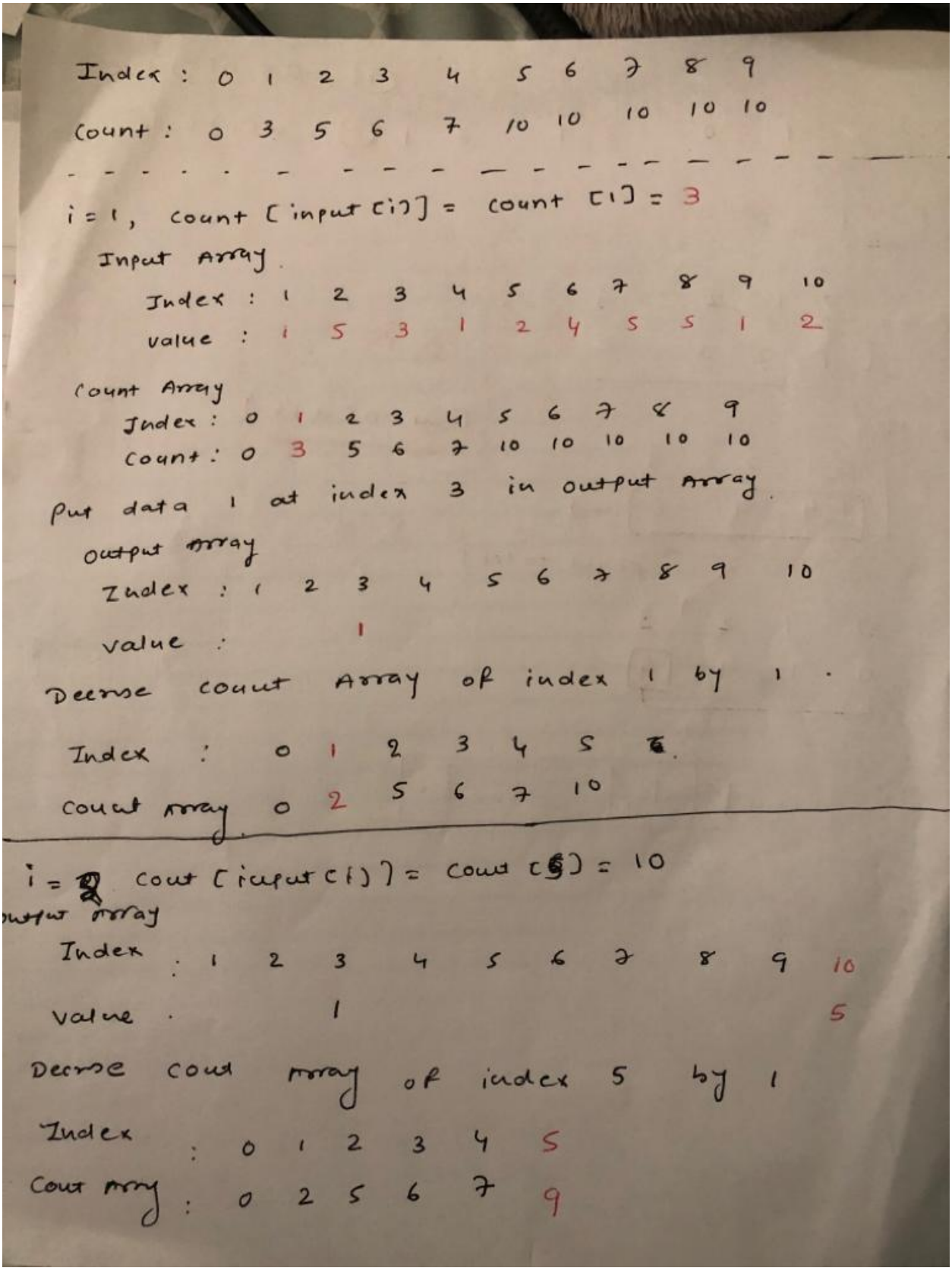

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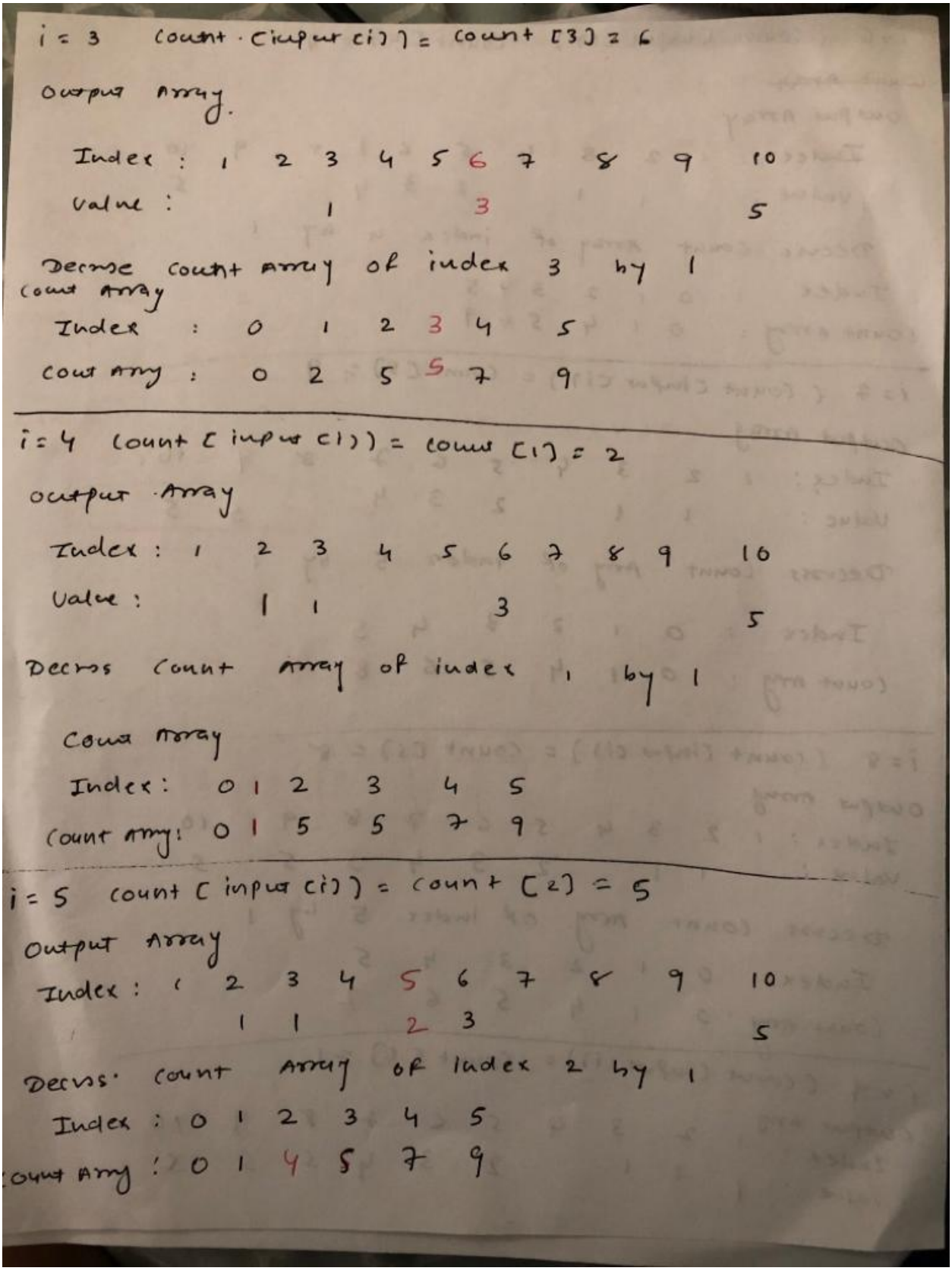

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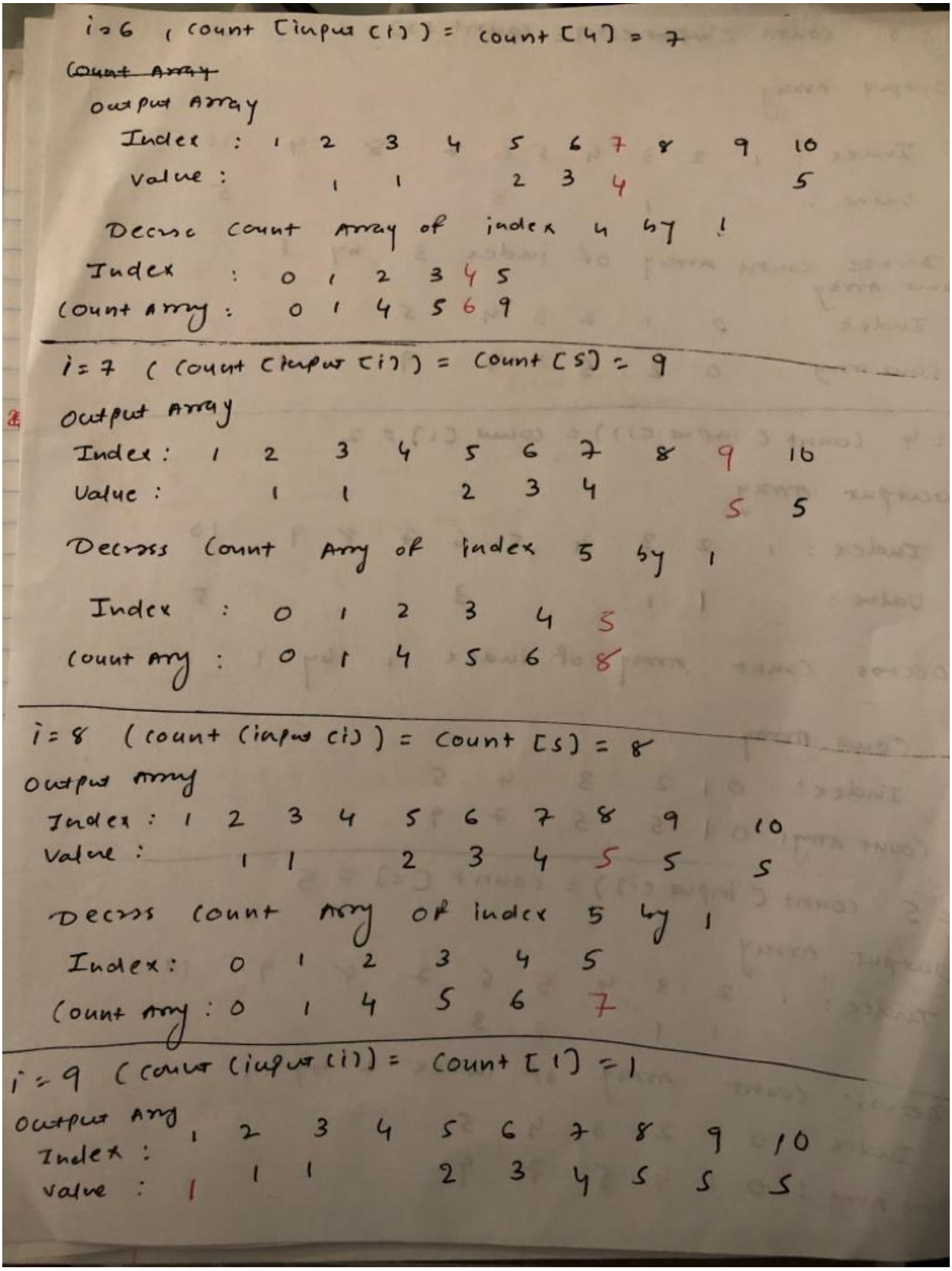

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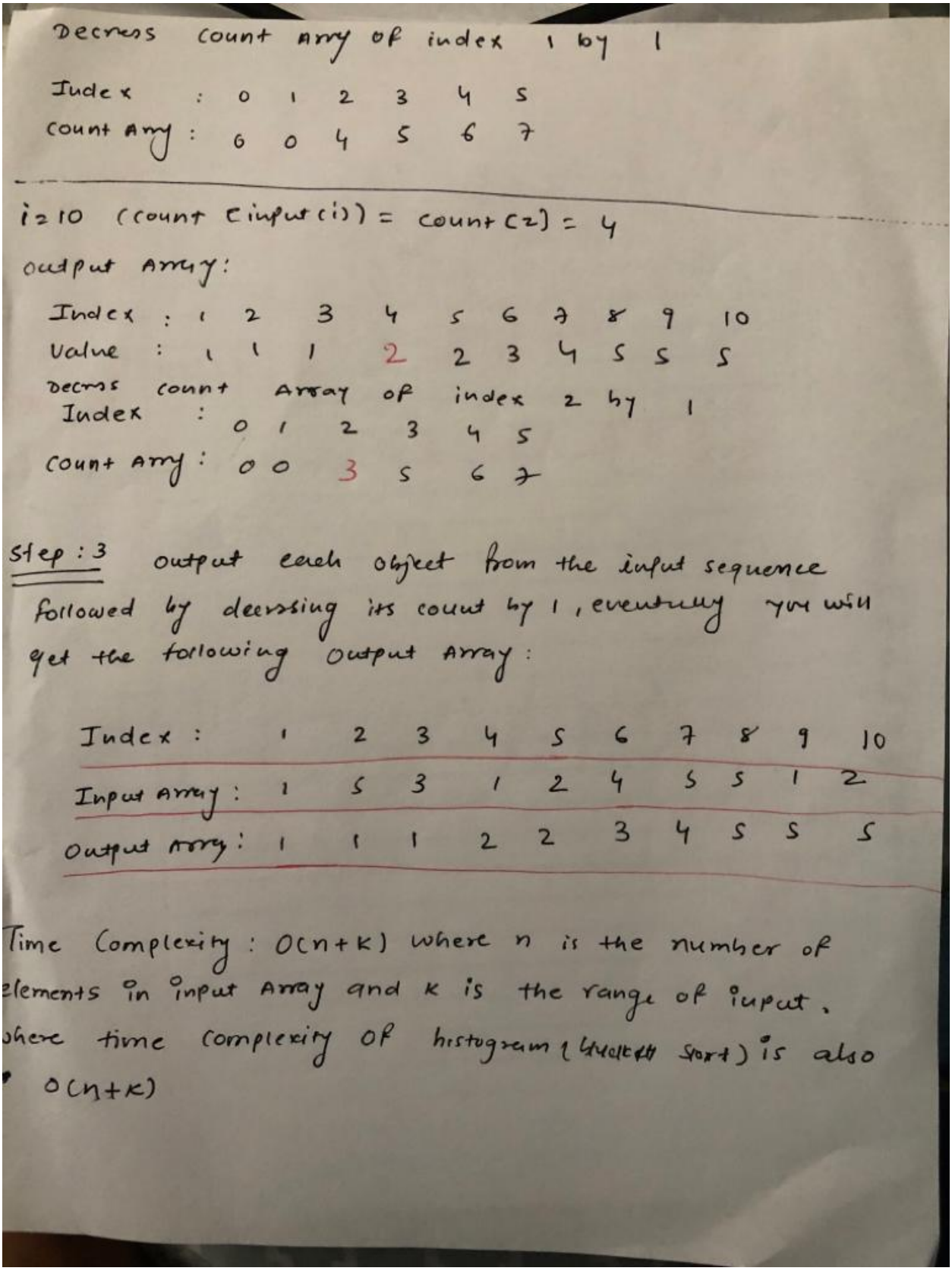

Decress count Arry of index 1 by 1

Index	:	0	1	2	3	4	5
count Arry	:	6	0	4	5	6	7

i=10 (count Cinput(i)) = count(2) = 4

output Array:

Index	:	1	2	3	4	5	6	7	8	9	10
Value	:	1	1	1	2	2	3	4	5	5	5

decrss count Array of index 2 by 1

Index	:	0	1	2	3	4	5
count Arry	:	0	0	3	5	6	7

Step : 3 output each object from the input sequence followed by decressing its count by 1, eventually you will get the following output Array:

Index :	1	2	3	4	5	6	7	8	9	10
Input Array :	1	5	3	1	2	4	5	5	1	2
Output Arry :	1	1	1	2	2	3	4	5	5	5

Time Complexity : O(n+k) where n is the number of elements in input Array and k is the range of input. where time complexity of histogram (bucket sort) is also O(n+k)

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