Q1. Given an array where all its elements are sorted in increasing order except two swapped elements, sort it in linear time.
Assume there are no duplicates in the array.

Input: arr[] = [3, 8, 6, 7, 5, 9, 10]
Output: arr[] = [3, 5, 6, 7, 8, 9, 10]

Input: arr[] = [1,2,4,3,5,6]
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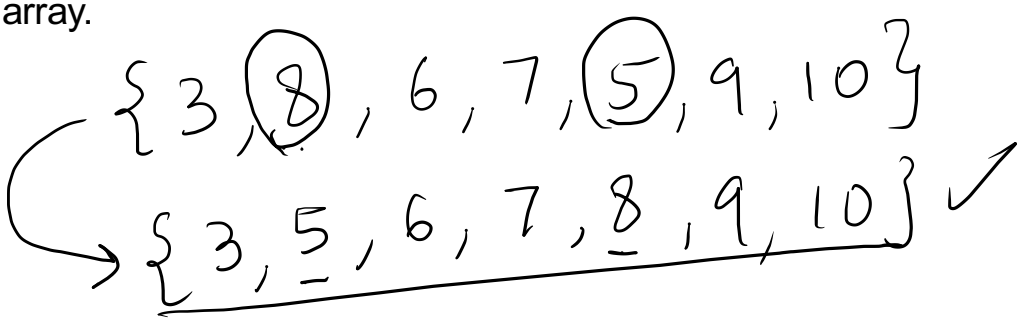

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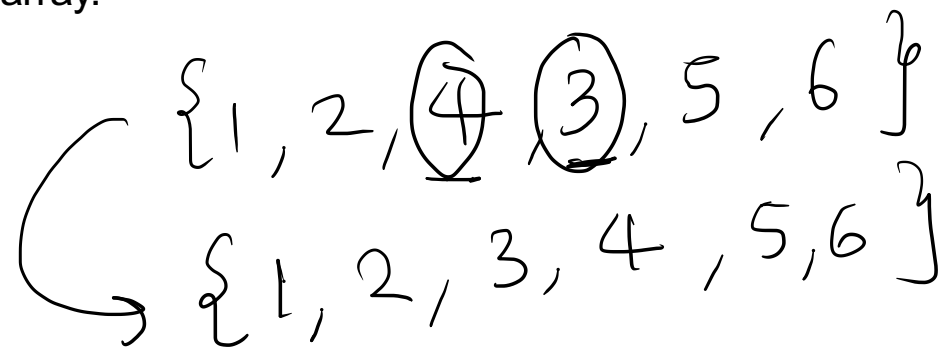
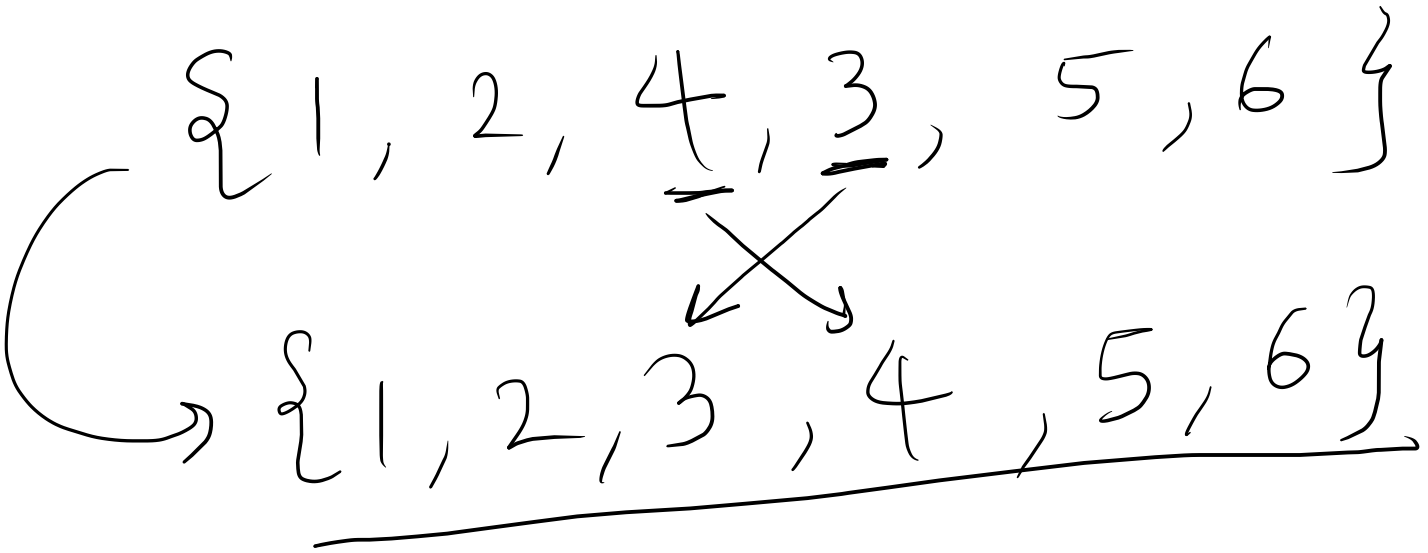
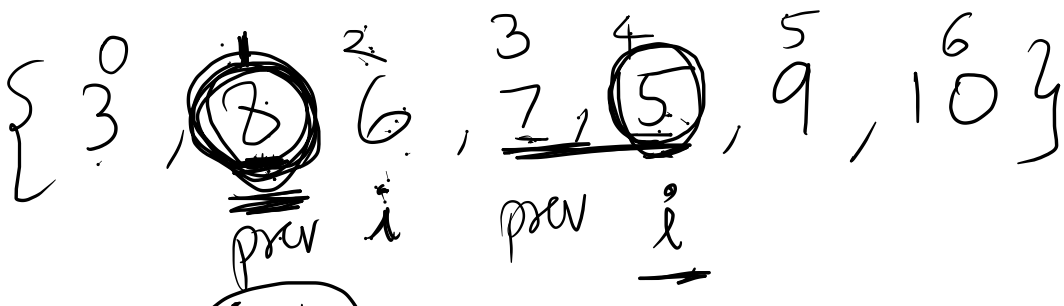



{1, 2, 4, 3, 5, 6}
{1, 2, 3, 4, 5, 6}

1. Find the swapped elements
2. Swap them



(7, 5)

(7, 5)

prev i

8 > 6

prev > arr[i]

7 > 5

x = 1

y = 4

(8, 6)

(7, 5)

swap(arr[x], arr[y])

0 1 2 3 4 5

{ 1, 2, 4, 3, 5, 6 }

prev = i-1

prev > arr[i]

4 > 3

(4, 3)

i-1 i

✓ X = i-1

✓ Y = i

$$T.C = O(n)$$

$$S.C = O(n)$$