1. Write a program to find all common elements between two unsorted arrays A and B both of size n and store the output in another array C. Assume that arrays A and B does not contains any duplicate elements. Implement an O(nlogn) algorithm.

2. Given two sorted arrays of same length. Repeat 1] and implement an O(n) algorithm.

3. Given an unsorted array A of n unique elements, and an integer k, where $0 \leq k < n$. Write a program to find the k'th smallest element in the given array.
Implement an O(nlogn) in-place algorithm.
Implement an O(nk) in-place algorithm. Use bubble/selection sort
Implement an in-place algorithm. Use BST / binary max heap (implement heap with an array)
Implement an in-place algorithm. Use binary min heap (implement heap with an array)

Input:
A = {8, 15, 5, 4, 30, 10}
k = 4
Output: 10

4. Let A[0 : n-1] be an array of n distinct numbers. If i<j (i and j are ordered indices) and A[i]>A[j], then the pair (a[i],a[j]) is called an out of ordered pair of an array A. write a program to count the out of ordered pair(s) of a given array.
Implement an $O(n^2)$ algorithm.
Can you try to implement an O(nlogn) algorithm.
Input : A = {5, 9, 14, 25, 31, 45}
Output : 0
Input : A = {54044, 14108, 79294, 29649, 25260, 60660, 2995, 53777, 49689, 9083}
Output : 28
Input : A = {8, 7, 6, 5, 4, 3, 2, 1}
Output : 28
Input : A = {2, 4, 1, 3, 5}
Output : 3
Input: A = {1, 20, 6, 4, 5}
Output: 5
Input: A = {2, 3, 6, 9, 1}
Output: 4
Input : A={1,3,5,2,4,6}
Output : 3
Input : A = 4,3,5,2,1)
Output : 8

5. Extend 4] to display the out of ordered pair(s) also.