Task-1:

Here, the merge sort technique is used and we used a function merge and used the append function to do rest of the part. Here, if the array is already sorted the inversion count is 0.

Task-2:

The code reads input values, creates a dictionary with squared values, applies a function to calculate sums of elements, finds the maximum value from the sums, and writes it to an output file.

Task-3:

Task-3:

All the smaller elements are on left and all larger elements are on the right side of the pivot and by partition technique we put the pivot on the right position.

Task-4:

Here recursive search is the case. A element is picked and put it in its right position. If the index of pivot is greater than k, we search in the left subarray and viceversa until the pivot is equel to the value of of k.