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Sec: 2

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Homework#2: Number Inversion

I used 2 functions :

mergeSort():

-mergeSort function takes 4 parameters which are the main array the array size the left new subarray start and the right new subarray start.

Inside it initiate a temp array with the same size of the original

it asks if the right index higher than the left it starts to calculate middle index which is $(\text{right} + \text{left} / 2)$ then we call the function again recursively for the left subarray which will take this time the left and mid for (left,right) parameters

and for the right subarray it takes the middle+1 and right indeces for (left,right) parameters.

The returned value is the numer of inversions .

After this we merge the two subarrays again and send back the total numer of the inversions in the array.

merge():

-merge takes 5 parameters which are original array temp array ,left index,middle and right.

It fills the temp array with the original subarrays while fullfilly the condition of $a[\text{left}] > a[\text{right}]$ and then increamenting the counter when it does , at last it copies back the temp array into the original array and return the numbber of inversions.