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section : 03

Course : CSE221

Task 1_1:

First of all, the code inp reads input and write output from input_1.txt and output.txt file. Then it reads the first line of the file and converts them to integers. Then, it reads second line and converts them to integers. It checks if the sum of number is equal to b exists. If yes, it shows it in output file and else print impossible otherwise. Time complexity is $O(n^2)$

Task 1_2:

It follows the same approach. But to get time complexity $O(n \log n)$ we solved it using merge sort algorithm on the list of tuples based on the numbers. Then it searches for the numbers whose sums is equal to b. It basically uses binary search. If result exist then it prints the result, otherwise, it simply print impossible. Time complexity is $O(n \log n)$ as it inputs the length of the num list.

Task 2-1:-

first of all, the code also reads and writes from the file. Then it reads the first number and converts them to integer and reads the second number and converts them to integer. The code besically merges the two list and creates a new merged list and gives the merged list to output file. Time complexity is O(n).

Task 2-2:-

The code reads input from a file. It performs merge sort on two lists and merges the sort lists. The sorted and the merged results is written to the output file. The time complexity is (nlogn).

Task- 3 :-

As usual, the code takes a input and output file. It reads the value of t from the first line which indicates the length. It reads numbers from second line and convert them to integer and stored them to list1. Merge function is used for merging two lists in sorted order and Mergesort for recursively sorting the given list using merge functin. It applies Merge Sort function to list1 to get sorted list. And then it writes the element to the file.

Task - 4 :-

The code takes input and output file. It reads value of T from the first line which indicates length. It reads the second line and converts them to integers and store them to list1. There is a recursive function called find_max. that finds the maximum value. Then it writes the max_val to output file.