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Data Structure (AI102)
B.Tech I - II Semester Assignment-10

1. You are given a text file, named "students.txt" that contains students' records. Each Line contains information of a single student in the form of <Student Name, Roll No, Department>.

   A. Read the records from the file into an array of structures.

   B. Three Options will turn up: (1) Bubble Sort, (2) Binary Search, and (3) Quit. In the following we describe what your C/C++ program will do on Selecting the options.

   (1) Bubble Sort: Sorts the records based on Student Name. If more than One students has the same name, then sort them on their roll no.

   (2) Binary Search: Given a student name, the function will return all the Student records <Student Name, Roll No, Department> having the Student name.

   (3) Quit: Exit the program.

2. Let A[n] be an array of n distinct integers. If I < j and A[i] > A[j], then the pair (I, j) Is called an inversion of A. Write a C/C++ program that determines the number of Inversions in any permutation on n elements in O(n lg n) worst-case time. (Hint: Modify merge sort)

   Example: A = {4, 1, 3, 2} output is 4