EE 355 Lab 4

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In this lab, we need to read an input file and set the first number in that file as First-number 1) using linear search to find the same number in the file and locate the row, literation time used to find that number. 2) once found that row, sort that row using any kind of sorting algorithm, 3) using binary search to find the index of the number.

In my code, I created an class named matrix, inside this class I defined some useful variables and some useful functions such as: linearsearch(), sort_row(), binarySearch() ect.

Linear Search: using two "for" loops, and if statement to check if value[i][j] = first number and the iteration > 1 (to avoid compare with itself and kill the for loop). If yes, return the value, i , which is the row number.

Sort_row (int n): (n as the length of that array) using babble sort method and recursive. if n = 1, return, (this is the base case). Using for loop literate until n – 1. Inside of the for loop, if list[i] >list[i+1], swap the position of those two. At outside of the for loop, recall the same function (sort_row(n-1))with 1 shorter then the original array.

//reference: https://www.geeksforgeeks.org/bubble-sort/

Binary Search (int l, int r): (l as the lift side and r as the right side of that array) using while loop. While(left side <= right side) mid = l + (r-l)/2, as the mid index. If this mid index value = first number return mid index, if this mid index value < first value, let left side = mid +1; else, right side= mid – 1;

//reference: https://www.geeksforgeeks.org/binary-search/

Main: open input file and output file, reading all the values from input file into an 2d array that created in the matrix. Output correct values to the output file.