

IT WORKSHOP ENDSEM PROJECT

Yashasvi Jain(15UEC077), Tayba Wasim(15UCS150)

”How you look at the problem is pretty much how you’ll see it”

I. DIFFERENT ALGORITHMS FOR SORTING

A. BUBBLE SORT

Bubble Sort works by repeatedly stepping through lists that need to be sorted, comparing each pair of adjacent items and swapping them if they are in the wrong order.

B. INSERTION SORT

Insertion Sort inserts each item into its proper place in the final list. The simplest implementation of this requires two list structures- the source list and the list into which the sorted items are inserted.

C. MERGE SORT

Merge Sort splits the list to be sorted into two equal halves and places them in separate arrays. Each array is recursively sorted and then merged back together to get the final sorted list.

D. QUICK SORT

Quick Sort is an in-place, divide and conquer, massively recursive sort. Its essentially in-place version of the merge sort.

E. SELECTION SORT

Selection Sort is an in-place comparison sort. It is inefficient on large lists and generally performs worse than similar insertion sort. (2)(1).png

../Desktop/Screenshot (2) (1).png

II. WHICH SORTING ALGORITHM IS THE BEST?

A. Number of Comparison(in worst case) Vs number of Elements(n is the number of elements in the array)

Sorting Algorithm	Number of Comparisons
Bubble Sort	$O(n^2)$
Insertion Sort	$O(n^2)$
Merge Sort	$O(n \log n)$
Quick Sort	$O(n^2)$
Selection Sort	$O(n^2)$

III. CONCLUSION

If the data set is small, it is semmed that bubble sort is the best sort since it is faster while in case of large data set Merge sort is the best sort since it does not matter how much the memory it takes as it divides array into two halves.