

Conversion of Virtual Labs from Flash to JavaScript



AIM

To create tools and notations for visualizing recursion based sorting algorithms and comprehend its dynamics.

INTRODUCTION

- Data structures and algorithms form the fundamentals of theoretical computer science.
- The computer science students should have complete understanding of basic algorithms such as sorting, searching etc. as well as data structures for manipulating them.
- The existing visualization tools are not adequate. Using these we can see the data being sorted but we are unable to make out the recursive structure of the algorithm as well as other details such as time-complexity, space-complexity etc.
- Using our tool one could make out these parameters as well as write code if necessary without any external sources

METHODS

The experiments are based on HTML, Javascript and Dagre. The first two components are quite familiar. The main component is Dagre a d3 based graph visualization library. It allows us to plot a graph with great flexibility and minimal code. It also offers a great variety of styling and labeling options which made it the most suitable library for this project.

RESULTS

Two of the most common recursion based algorithms i.e. Merge Sort and Quick sort have been converted to JavaScript and html based experiments.

CONCLUSIONS

1. Algorithms can be visualized using these experiments in a much better way.
2. The code of these algorithms can be written just by using these visualizations.
3. Details such as time complexity, space-complexity etc. can be obtained from the visualization itself.



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