

JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY

Department of CSE/IT



MINOR PROJECT

ALGOVISUALIZER

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INTRODUCTION :

A few algorithm visualization tools have already been developed (usfca.edu etc) . Researchers have introduced many innovations to their visualization tools including color , smooth transitions from one interesting state to another . However most of them don't simultaneously show the basic things as algorithm code , time complexity , pseudo code etc . We believe an algorithm visualization tool can help teachers to teach in a better and more effective way resulting in students learning better .

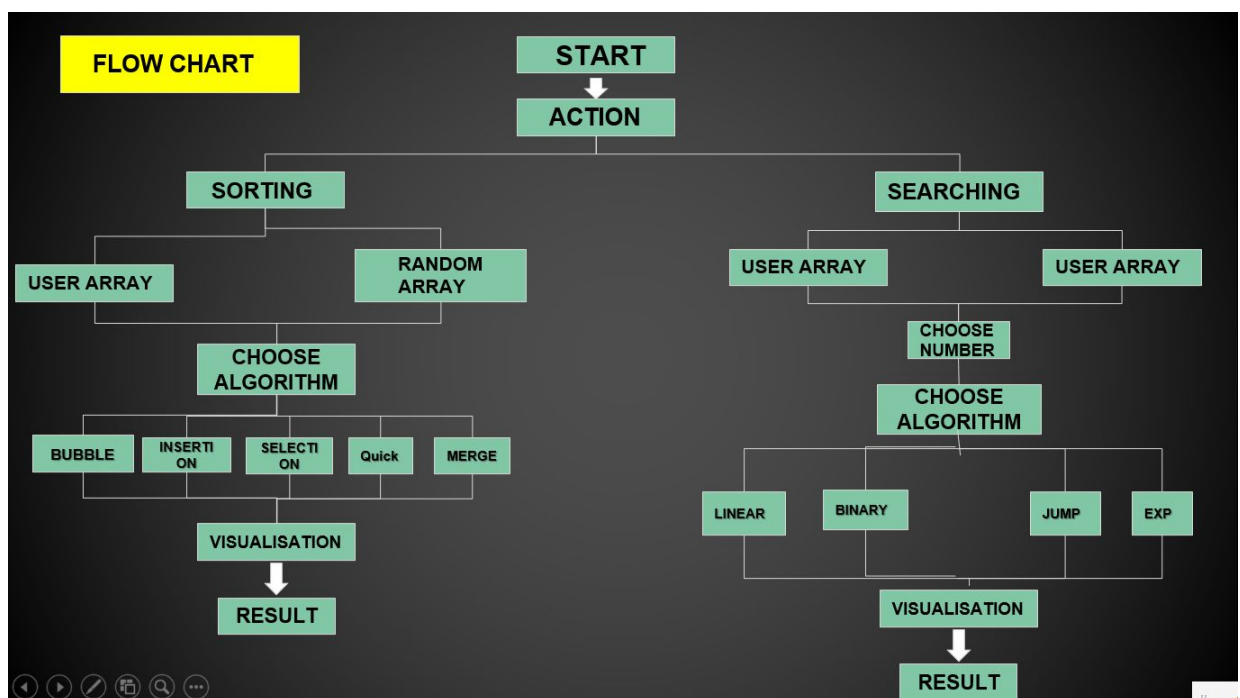
Our analysis of student's learning difficulties revealed that the students who developed good visual representations of the changing array in searching and sorting techniques gained a better understanding at their implementation as well . The algorithm visualization tool that we developed is designed to help all students in developing such visual representations . This together with the facility to enter your own set of number arrays enable most students to achieve a better understanding of searching and sorting concepts.

PROBLEM STATEMENT :

- Some students have difficulty in translating the algorithms into dynamic behaviour of data structures in executable programs . The text of an algorithm is generally short and some students find it difficult to comprehend . Some students are comfortable with one data structure but not comfortable with another .
- Many students learn the text of an algorithm without knowing its actual working and implementation . In doing so they might score well in college offline exams but fail when asked for a practical .

DESIGN AND IMPLEMENTAION :

This project is a pure development project and is made using html , css , javascript , sorting and searching algorithm etc . To see the visualization of any algorithm user must decide b/w sorting and searching techniques . According to his/her choice the user will be directed to select a random array or enter his own array . If use choosed searching then he/she will be requested to choose a number to be searched else it will direct them to choosing algorithm where after choosing the algorithm they will see visualization and then the final result.



FEATURES :

- ❖ Visualization of sorting algorithms
- ❖ Visualization of searching algorithms
- ❖ Time complexity, pseudo code and complete code of algorithms.

TECHNOLOGIES USED :

- ❖ HTML
- ❖ CSS
- ❖ JAVASCRIPT
- ❖ SVG
- ❖ REACT JS and D3

CONCLUSION AND FUTURE WORKS:

In this project , we present a visualization tool designed to aid students learn sorting and searching algorithms . This tool not only let students visualise a random array but also allow them to insert their own integer array .

Because of the time limitation , only the most commonly used sorting and searching algorithms are implemented in this project . Still there are plenty of rare and unknown algorithms that we plan to add in future .

Another possible future enhancement can be to allow users to stop and perform step by step actions to know and understand the working of different searching and sorting algorithms .

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