

**ABSTRACT**

**PROJECT NAME: Sorting Visualizer**

With the recent research in interest in computational thought, an important question has arises: what are the best methods for teaching students basic computing concepts? Visualization is considered as one way to support student learning. With an aim to help and motivate students, number of researchers has come up with various tools.

Sorting is the process of arranging elements either in ascending order or descending order. In this project I have tried to develop a sorting visualizer using the technologies like HTML, CSS, JavaScript, React and Data Structure and Algorithm. It will display the internal working mechanism of different types of sorting like Insertion Sort, Selection Sort, Bubble Sort, Quick Sort, Heap Sort and Merge Sort. We often fail to understand the core idea of a particular algorithm because we are unable to visualise how they work. The main objective of developing this Visualizer is to make a learner comfortable in learning these techniques quickly and easily.

We know the sorting algorithms are the most widely used algorithms in many applications including Database management system, Web Search Engines, Operating Systems, Social Media and content Recommendation, E-Commerce ,Telecommunication, Graphics and Computer Gaming.

The web application represents data in the form of a bar graph and the Sorting Visualizer features adjustable parameters such as array size and animation speed, allowing users to experiment with different scenarios and witness algorithmic behaviour in varying contexts. It becomes a valuable tool for debugging and performance analysis, ensuring the selection of the most suitable algorithm for specific datasets and improving overall application efficiency.

In conclusion, the Sorting Visualizer stands at the intersection of education, technology, and practical application. By providing an interactive, visually stimulating platform. This abstract encapsulates the innovative approach of the Sorting Visualizer, underscoring its significance in shaping the future of computer science education and algorithmic problem-solving.

**Key-words:** HTML, CSS, JavaScript, React,Sorting Algorithm, Visualization.

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