

# Optimal Sorting Algorithms Visualization and Comparison

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# **1 Introduction**

There are several sorting algorithms that are quite popular and have a wide range of uses in real world applications. In general, they employ a different approach to solving the problem of sorting a set of numbers. The chosen algorithms for this topic are as follows:

- **Merge Sort**
- **Quick Sort**
- **Binary Tree Sort**
- **Heap Sort**
- **Shell Sort**

Each of these algorithms will be explained how it works and how it was implemented.

## **1.1 Merge Sort**

## **1.2 Quick Sort**

## **1.3 Binary Tree Sort**

## **1.4 Heap Sort**

## **1.5 Shell Sort**

# **2 Random Number Generation**

# **3 Visualization**

# **4 Timing**