

Sorting Algorithm Comparison

Vivek Alumootil

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1 Merge Sort vs. Bubble Sort

$$\log_{10} n \propto n$$

$$\log_{10} n \propto \log_{\sqrt[n]{n}} n$$

$$\frac{\log_{\sqrt[n]{n}} n}{\log_{\sqrt[n]{n}} 10} \propto \log_{\sqrt[n]{n}} n$$

$$\frac{1}{\log_{\sqrt[n]{n}} 10} \propto 1$$

$$1 \propto \log_{\sqrt[n]{n}} 10$$

$$\log_{\sqrt[n]{n}} n \propto 10$$

$$n \propto 10^n$$

$$\boxed{n \propto 10^n}$$