Assignment: Comparative Analysis of Sorting Algorithms

[Your Name]

[Date]

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1 Introduction

2 Theoretical Overview

- **Bubble Sort:** $O(n^2)$ in the worst and average cases, $O(n)$ in the best case.
- **Insertion Sort:** $O(n^2)$ in the worst and average cases, $O(n)$ in the best case.
- **Merge Sort:** $O(n \log n)$ in all cases.
- **Quick Sort:** $O(n^2)$ in the worst case, $O(n \log n)$ on average and in the best case.
- **Heap Sort:** $O(n \log n)$ in all cases.
- **Radix Sort:** $O(n \cdot k)$, where k is the number of digits in the largest number.

3 Experimental Analysis

3.1 Quick Sort Variants

Analyze the performance of the three Quick Sort variants:

3.2 Overall Performance Comparison

4 Conclusion

5 References