

Lab 8: Sorting Algorithms

EPL231 – Data Structures and Algorithms

Sorting Algorithms

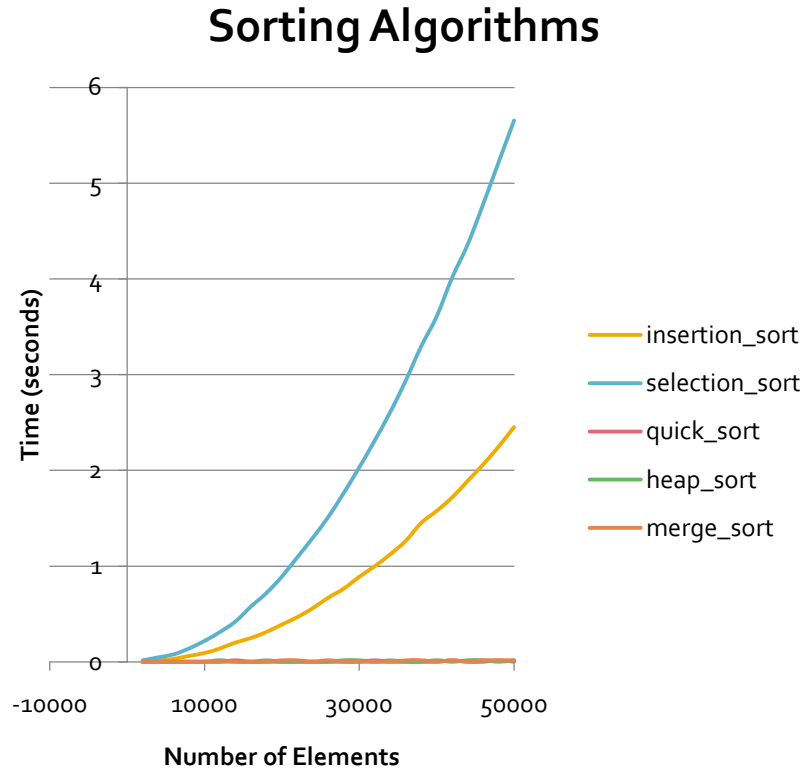
- Implement and Compare the following:
 - Insertion Sort
 - Selection Sort
 - Quick Sort
 - Heap Sort
 - Merge Sort
- Interesting Info:
 - <http://www.sorting-algorithms.com/>
 - <http://www.cs.ubc.ca/~harrison/Java/sorting-demo.html>

Comparison

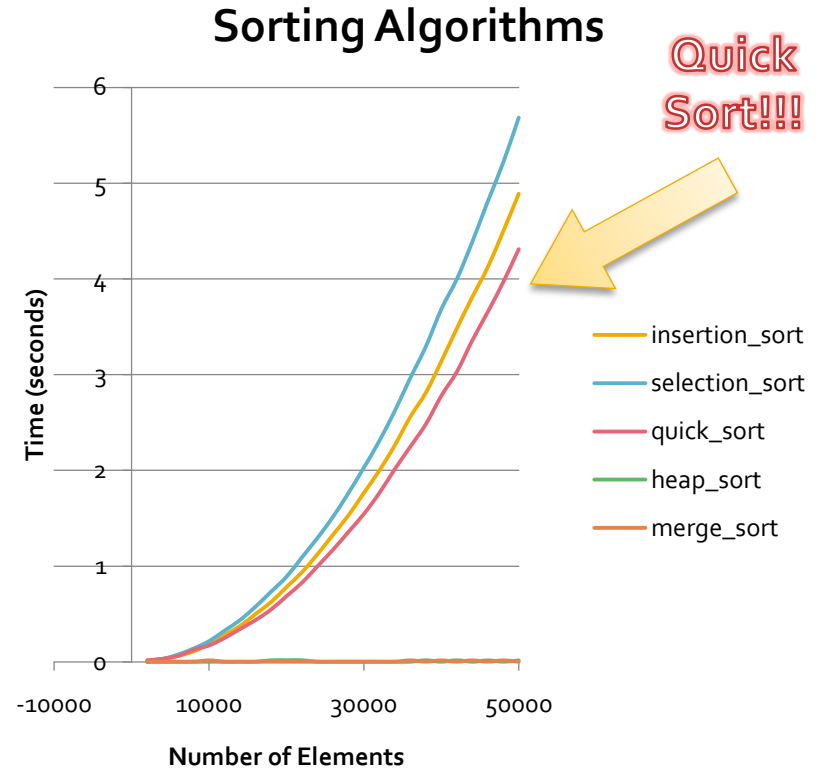
Name	Best	Average	Worst	Memory	Stable?
Insertion Sort	$O n$	$O n^2$	$O n^2$	$O 1$	Yes
Selection Sort	$O n^2$	$O n^2$	$O n^2$	$O 1$	No
Bubble Sort	$O n^2$	$O n^2$	$O n^2$	$O 1$	Yes
Quick Sort	$O n \cdot \log n$	$O n \cdot \log n$	$O n^2$	$O 1$	No
Heap Sort	$O n \cdot \log n$	$O n \cdot \log n$	$O n \cdot \log n$	$O 1$	Yes
Merge Sort	$O n \cdot \log n$	$O n \cdot \log n$	$O n \cdot \log n$	$O n$	Yes

Comparison

RANDOM INPUT

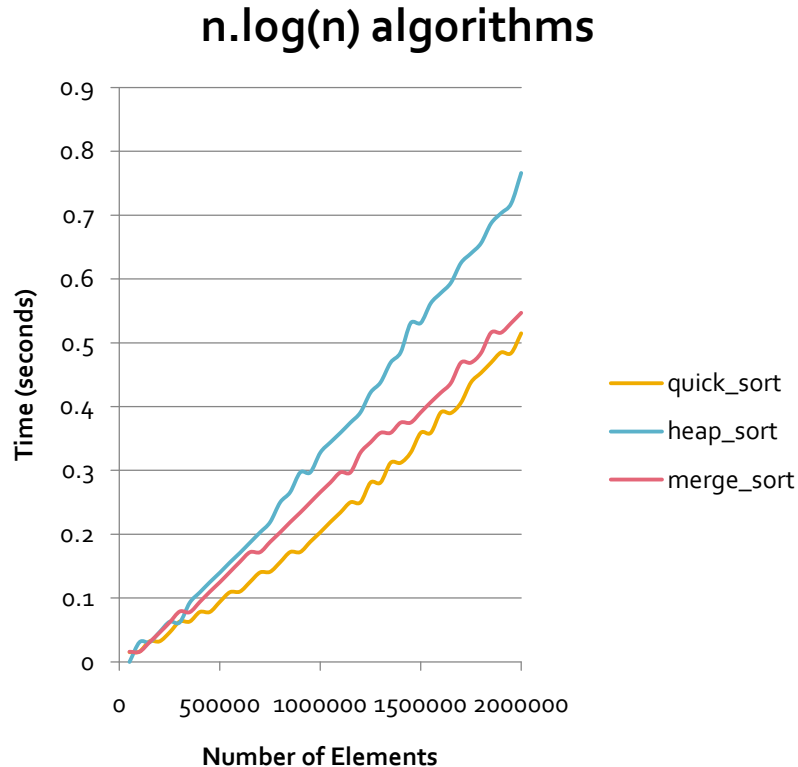


SORTED INPUT

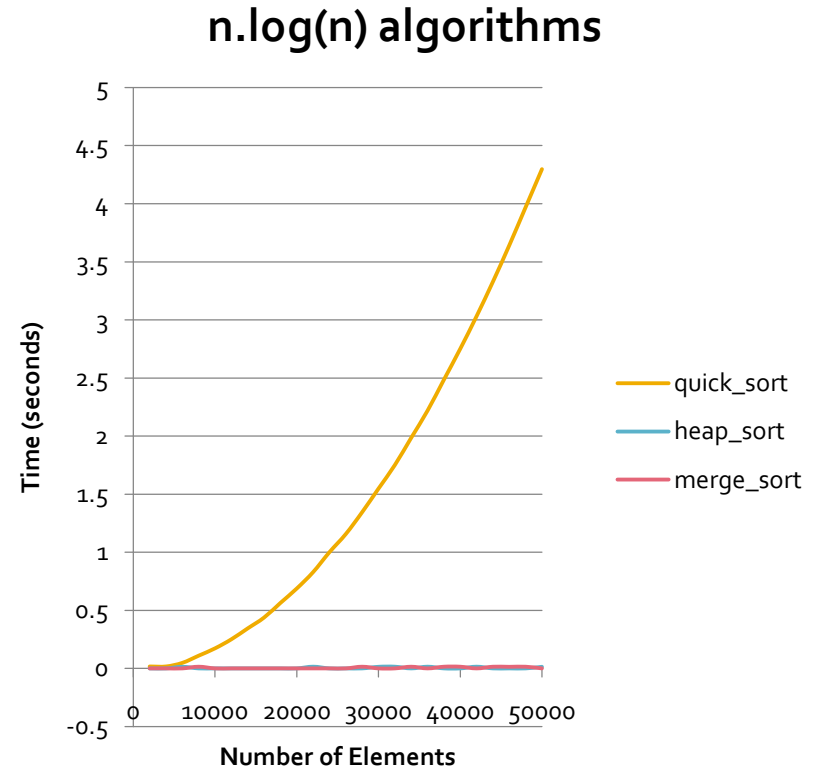


Comparison – $n \cdot \log(n)$ Algorithms

RANDOM INPUT



SORTED INPUT



The End