Ahmed Elgendy

10/31/2021

CS 152

Extra Credit

Assignment

Binary Search:

|  |  |  |
| --- | --- | --- |
| Test # | Array Size | Time (millis) |
| 1 | 5,000 | 17 |
| 2 | 10,000 | 20 |
| 3 | 500,000 | 25 |
| 4 | 50,000,000 | 33 |
| 5 | 100,000,000 | 34 |

A picture containing table

Description automatically generated

The polynomial equation for Binary Search T(n) = 13067.2923 \* n^2 + 22350.7582 \* n + 1116044.2668.

Bubble Sort:

|  |  |  |
| --- | --- | --- |
| Test # | Array Size | Time (millis) |
| 1 | 5,000 | 38 |
| 2 | 10,000 | 181 |
| 3 | 30,000 | 1758 |
| 4 | 80,000 | 13161 |
| 5 | 100,000 | 20724 |

Chart, line chart

Description automatically generated

The polynomial equation for Bubble Sort is T(n) = 0.0008 \* n^2 + -10.621 \* n + 1328.6593.

Linear Search:

|  |  |  |
| --- | --- | --- |
| Test # | Array Size | Time (millis) |
| 1 | 5,000,000 | 8 |
| 2 | 15,000,000 | 12 |
| 3 | 30,000,000 | 13 |
| 4 | 80,000,000 | 31 |
| 5 | 100,000,000 | 39 |

Chart

Description automatically generated

The polynomial equation for the linear search is T(n) = 19962.9738 \* n^2 + 31511.6844 \* n + 4146.6687.