|  |  |  |
| --- | --- | --- |
| N | Time | Range |
| 10000 | .011 | - |
| 20000 | .043 | 3.9 |
| 40000 | .049 | 1.13 |
| 80000 | .046 | .938 |
| 160000 | .119 | 2.58 |
| 320000 | .186 | 1.56 |
| 640000 | .464 | 2.49 |
| 1280000 | .985 | 2.12 |

Sort 1 – O(NlogN) both times – Merge Sort

Sort 2 – O(NlogN) Best Case, O(N^2) Worst Case – Randomized Quicksort

|  |  |  |
| --- | --- | --- |
| N | Time | Range |
| 10000 | 0.009 | - |
| 20000 | 0.045 | 5 |
| 40000 | 0.065 | 1.44 |
| 80000 | 0.042 | 0.646 |
| 160000 | 0.053 | 1.26 |
| 320000 | 0.104 | 1.96 |
| 640000 | 0.250 | 2.4 |
| 1280000 | 0.612 | 2.45 |

Sort 3 – O(N) – Insertion Sort

|  |  |  |
| --- | --- | --- |
| N | Time | Range |
| 10000 | 0.012 | - |
| 20000 | 0.049 | 4.08 |
| 40000 | 0.133 | 2.7 |
| 80000 | 0.042 | .315 |
| 160000 | 0.112 | 2.66 |
| 320000 | 0.236 | 2.1 |
| 640000 | 0.508 | 2.15 |
| 1280000 | 1.155 | 2.27 |

Sort 4 – O(N^2) both times – Non-Randomized Quicksort

|  |  |  |
| --- | --- | --- |
| N | Time | Range |
| 10000 | 0.149 | - |
| 20000 | 0.67 | 4.49 |
| 40000 | 2.740 | 4.08 |
| 80000 | 12.372 | 4.5 |
| 160000 | 57.818 | 4.67 |

Sort 5 – O(N^2) worst case, O(1) best case – Selection Sort

|  |  |  |
| --- | --- | --- |
| N | Time | Range |
| 10000 | 0.346 | - |
| 20000 | 1.004 | 2.9 |
| 40000 | 5.053 | 5.03 |
| 80000 | 21.8 | 4.31 |
| 160000 | 164.256 | 7.53 |