**Merge Sort Report**

CS6301.g42

David Tan, Khaled Al-naami, Peter Farago, Yu Lin

The times for different data size and different algorithm has been showed below. Please noted that we try each program several times and only the average running time is presented.

|  |  |  |
| --- | --- | --- |
| Avg.(ms) | Generic Type ***MergeSort*** | Generic Type ***InsertionSort*** |
| 1 M | 454 | 1951828 |
| 5 M | 2309 | n/a |
| 9 M | 4326 | n/a |
| 13 M | 6816 | n/a |
| 16 M | 7683 | n/a |

Table Average time for MergeSort and InsertionSort

Then we will show how man data can each sort algorithm handle with specific time limit as following.

|  |  |  |
| --- | --- | --- |
| DataSize | Generic Type ***MergeSort*** | Generic Type ***InsertionSort*** |
| 100ms | About 0.1M | About 7k |
| 200ms | About 0.3M | About 11k |
| 300ms | About 0.7M | About 14K |
| 400ms | About 0.85M | About 16K |
| 600ms | About 1.35M | About 19k |

Table DataSize for different time limits

Obviously, according to the Table 1 and Table 2, the insertion sort, as a n-square algorithm is much slower than merge sort which is a n-logn algorithm. The time consumed by Insertion Sort is not measureable after the data size become larger than 5 Mega bit. Actually, we try the InsertionSort with 5 Mega bit data. It takes more than 6 hours and doesn’t finished the task in that time.