Lab1 report

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1. Random
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5. Random : (time in second)

|  |  |  |  |
| --- | --- | --- | --- |
| random | Bubble | insertion | merge |
| 10-R | 2.45E-06 | 6.62E-07 | 9.34E-07 |
| 1000-R | 0.0166347 | 0.00291225 | 5.39E-05 |
| 10000-R | 1.58439 | 0.268903 | 0.000322345 |
| 100000R | 170.827 | 25.9909 | 0.00362776 |
|  |  |  |  |
|  |  |  |  |

For the random data type of file, the effect of each sorting method is different. The merge sorting is the fastest method compare to others. Even though in a really small amount of data that the insertion method has little time of efficient, the merge algorithm still has a highly time efficient. And with the bigger size of data, the time costing increasing.

1. Reversed : (time in second)

|  |  |  |  |
| --- | --- | --- | --- |
| reversed | Bubble | insertion | merge |
| 10-RE | 3.31E-06 | 2.45E-06 | 7.72E-07 |
| 1000-RE | 0.0179174 | 0.0056086 | 2.27E-05 |
| 10000RE | 1.71098 | 0.541448 | 0.000203962 |
| 100000RE | 162.169 | 55.7563 | 0.00199172 |
|  |  |  |  |

For the reversed data type of file, the effect of each sorting method is different. The merge sorting is the fastest method compare to others. However, the efficient of insertion and bubble method are close to each other which mean they may have similar functioning in sorting a big amount of data. And with the bigger size of data, the time costing increasing.

1. Unique : (Time in second)

|  |  |  |  |
| --- | --- | --- | --- |
| unique | Bubble | insertion | merge |
| 10 | 2.72E-06 | 1.34E-06 | 8.80E-07 |
| 1000 | 1.49059 | 0.261458 | 0.000306 |
| 10000 | 0.014587 | 0.002826 | 5.81E-05 |
| 100000 | 156.361 | 27.8282 | 0.003017 |

For the reversed data type of file, the effect of each sorting method is different. The merge sorting is the fastest method compare to others. One interesting thing here is unlike other three data types which the time spend will increasing with the size increasing, the unique data type have decrease in three method when the data size is 10000. It lead to that the change will be shaper than other data types.

4.Partial sort: (Time in second)

|  |  |  |  |
| --- | --- | --- | --- |
| partial | Bubble | insertion | merge |
| 10 | 2.27E-06 | 1.38E-05 | 8.32E-07 |
| 1000 | 0.012132 | 0.001163 | 3.14E-05 |
| 10000 | 1.07729 | 0.097957 | 0.000238 |
| 100000 | 113.731 | 10.3967 | 0.002223 |

For the partial sort data type of file, the effect of each sorting method is different. When the data at a small size of amount, the insertion sorting cost more time than merge. But when the size of data increasing, the bubble sorting still take the most time amount in those three sorting. And the merge use less time to finish sorting.