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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sorting algoritms | 10 elements | | | 100 elements | | | 1000 elements | | |
|  | random | sorted | reverse | random | sorted | reverse | random | sorted | reverse |
| Bubble\_sort | 600 | 400 | 600 | 23000 | 12700 | 14800 | 1724600 | 1188400 | 2029700 |
| Insertion\_sort | 600 | 300 | 400 | 700 | 600 | 800 | 676100 | 3500 | 744600 |
| Merge\_sort | 1000 | 1000 | 1200 | 7600 | 6200 | 7600 | 109900 | 61100 | 104500 |

When the number of elements is small, such as 10, the time complexity is not stable, and there is no significant difference between different algorithms. When the number of tests increases to 1000, we can find that the order of input affects the sorting speed, especially for bubble sorting and insertion sorting. Sorting arrays takes the lowest time (close to O(n)), while reverse sorting array order takes the most time. (nearly O(n2)). Merge sort has become the fastest and time-consuming (O(nlogn)) algorithm among the algorithms.