Correctness of selection sort

1. After the first iteration, the minimum element is placed in the first position, which means the first element is sorted.

2. Assume that after the ith iteration, the first i elements of the array are sorted. During the (i+1)th iteration, the minimum element from the remaining unsorted portion is placed at index i+1, ensuring that the first (i+1) elements are sorted.

3.After n−1 iterations, the entire array is sorted

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Time taken for different inputs | | | | | | | |
| No of inputs : | 4 | 16 | 64 | 4096 | 25000 | 50000 | 100000 |
| Bubble sort | 0.000001 | 0.000003 | 0.000012 | 0.023467 | 0.827904 | 4.649421 | 20.907312 |
| Insertion Sort | 0.000002 | 0.000002 | 0.000006 | 0.008416 | 0.296175 | 1.187522 | 4.694042 |
| Selection sort | 0.000001 | 0.000002 | 0.000010 | 0.012450 | 0.461020 | 1.739860 | 6.936192 |

A graph with blue and orange lines

Description automatically generated