# Task 6.3DN Sorting Algorithms — Timing Report

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## Experimental Conditions

**Operating System:** MacOS

**Processor:** M2

**Python version:** 3.13.1

## Unsorted Data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Algorithm** | **Trial time (ms)** | | | | | **Median** |
| **1** | **2** | **3** | **4** | **5** |
| Bubble | 451.3 | 523.8 | 548.5 | 594.3 | 739.5 | 548.5 |
| Selection | 183.9 | 197.3 | 215.6 | 252.7 | 294.2 | 215.6 |
| Insertion | 160.7 | 182.7 | 205.7 | 218.0 | 262.5 | 205.7 |
| List.sort (Powersort) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |

## Already Sorted Data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Algorithm** | **Trial time (ms)** | | | | | **Median** |
| **1** | **2** | **3** | **4** | **5** |
| Bubble | 216.8 | 250.3 | 273.3 | 303.7 | 349.8 | 273.3 |
| Selection | 167.2 | 186.3 | 212.5 | 232.4 | 270.6 | 212.5 |
| Insertion | 5.6 | 6.3 | 6.8 | 7.0 | 8.6 | 6.8 |
| List.sort (Powersort) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

## Discussion

[Write a 2–4 sentence explanation in your own words of the differences you observed. Your explanation does not need to be detailed or completely correct. It’s enough to describe relative differences in the number of comparisons or number of swaps performed. In other words, what does it *look like is happening* with the different algorithms and data sets?]

Powersort is the fastest among all the sorting algorithm and bubble sort is the slowest. In bubble sort, the algorithm has to go through the list n-2 number of time n being the length of the list swapping the list values accordingly in every loop whereas powersort being the in-built soring algorithm it is the fastest among all.