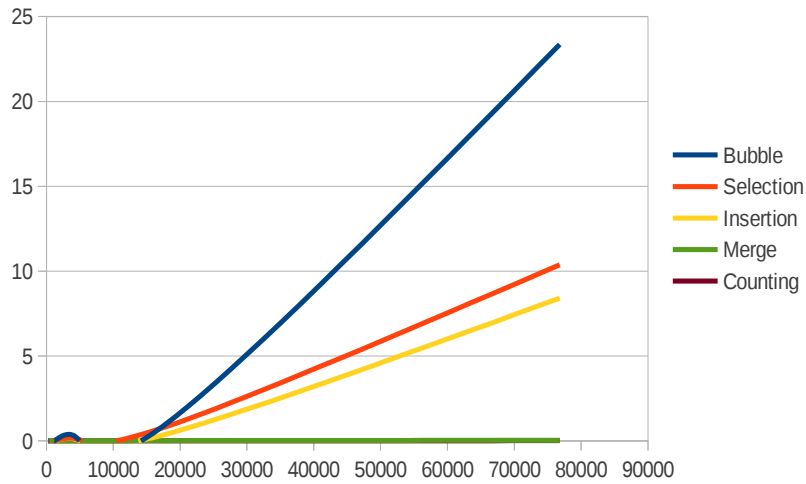
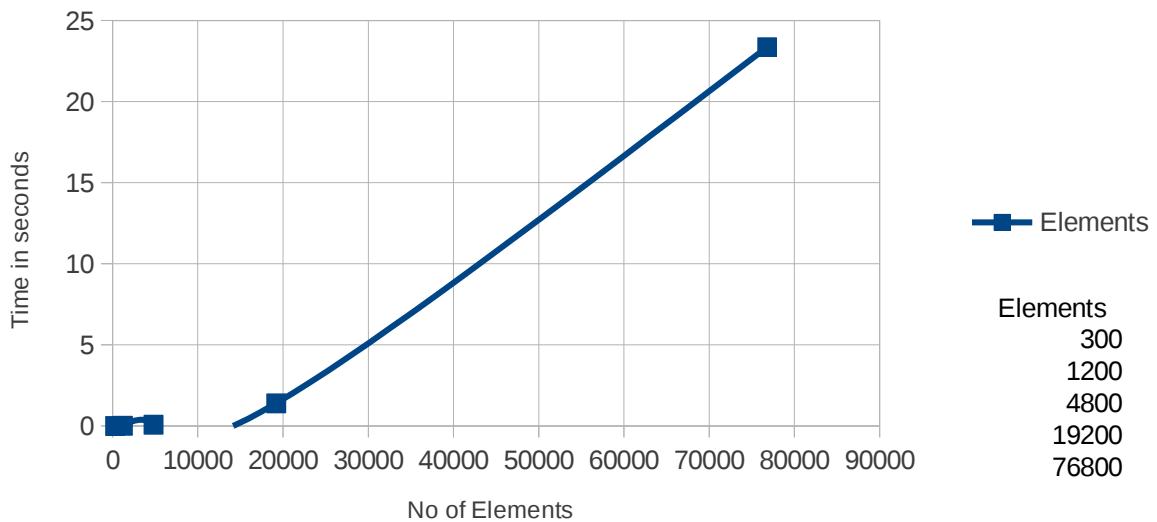


## COMPARISION OF ALL SORTS



| Elements | Bubble | Selection | Insertion | Merge  | Counting |
|----------|--------|-----------|-----------|--------|----------|
| 300      | 0.002  | 0.002     | 0.002     | 0.001  | 0.001    |
| 1200     | 0.01   | 0.0112    | 0.0062    | 0.002  | 0.002    |
| 4800     | 0.0742 | 0.091     | 0.0418    | 0.004  | 0.003    |
| 19200    | 1.4028 | 1.0128    | 0.5386    | 0.0146 | 0.0065   |

## Bubble Sorting

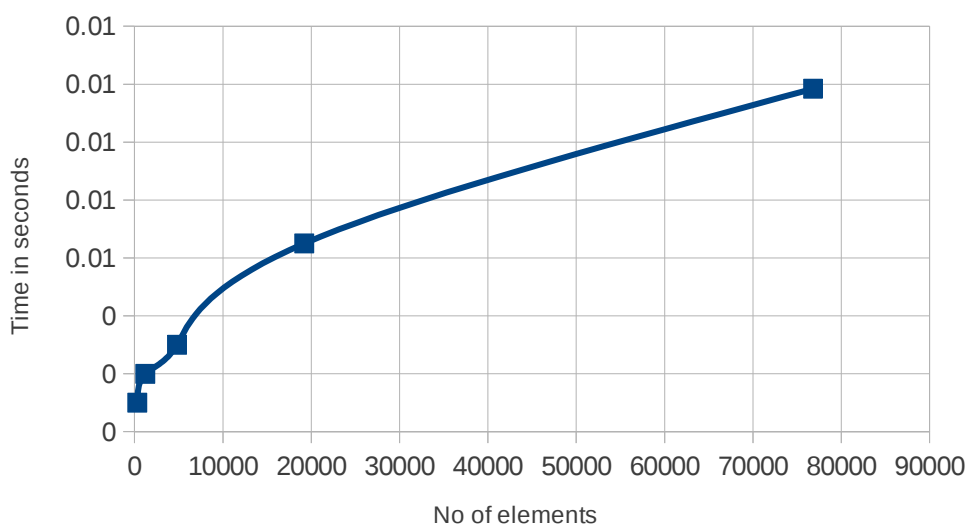


## Time Constraints:

| Case    | Order    |
|---------|----------|
| Best    | $O(n)$   |
| Average | $O(n^2)$ |
| Worst   | $O(n^2)$ |

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## Counting Sort



Time

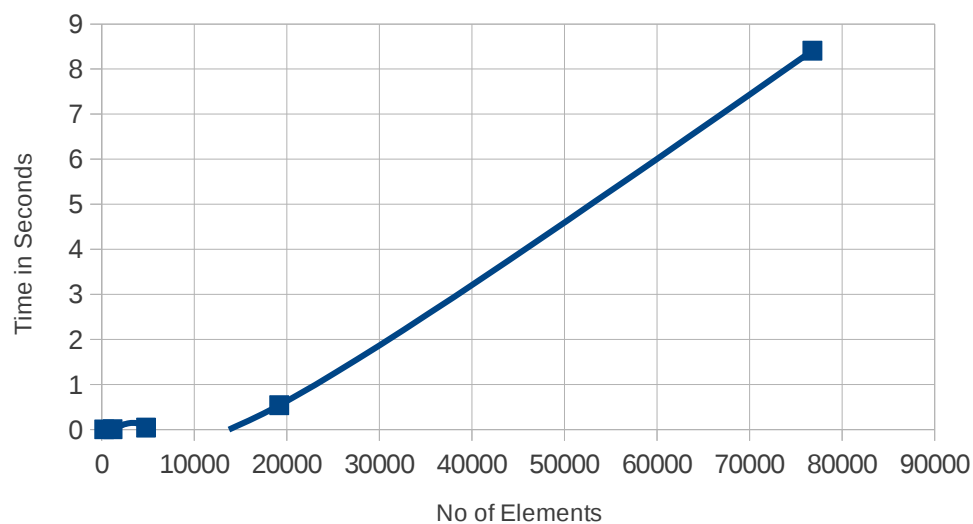
| Elements | Time    |
|----------|---------|
| 300      | 0.001   |
| 1200     | 0.002   |
| 4800     | 0.003   |
| 19200    | 0.0065  |
| 76800    | 0.01184 |

### Time Constraints:

| Case    | Order          |
|---------|----------------|
| Best    | $O(n \cdot k)$ |
| Average | $O(n \cdot k)$ |
| Worst   | $O(n \cdot k)$ |

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## Insertion Sorting



Time

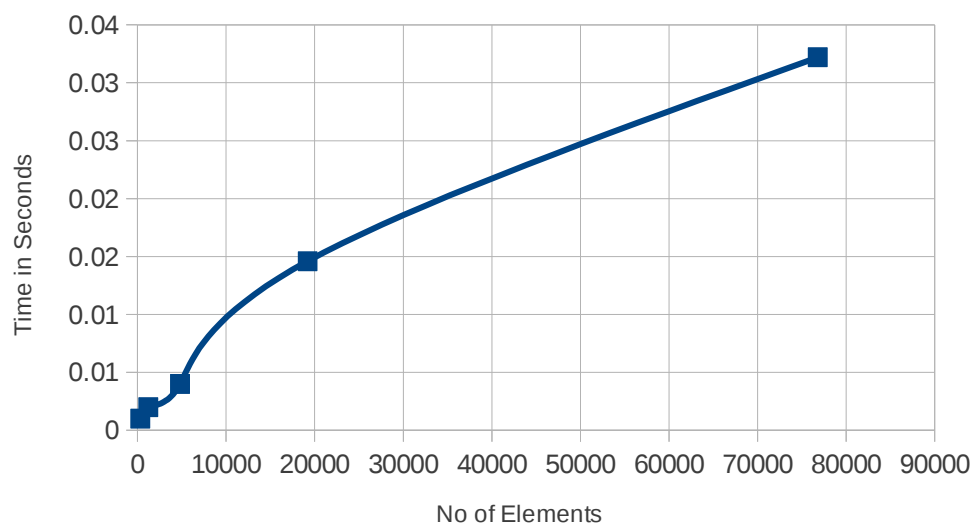
| Elements | Time   |
|----------|--------|
| 300      | 0.002  |
| 1200     | 0.0062 |
| 4800     | 0.0418 |
| 19200    | 0.5386 |
| 76800    | 8.4078 |

Time Constraints:

| Case    | Order    |
|---------|----------|
| Best    | $O(n)$   |
| Average | $O(n^2)$ |
| Worst   | $O(n^2)$ |

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### Merge Sorting

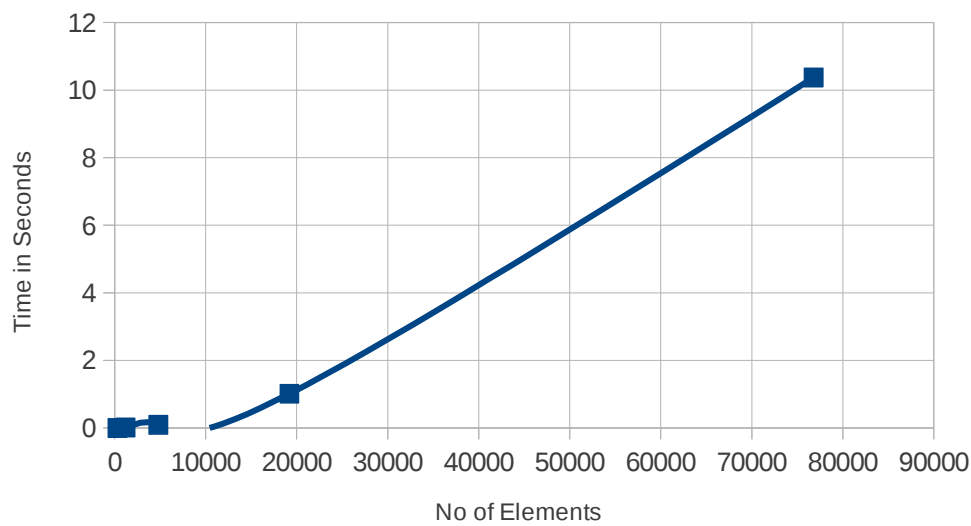


| Time     |        |
|----------|--------|
| Elements | Time   |
| 300      | 0.001  |
| 1200     | 0.002  |
| 4800     | 0.004  |
| 19200    | 0.0146 |
| 76800    | 0.0322 |

Time Constraints:

| Case    | Order          |
|---------|----------------|
| Best    | $O(n \log(n))$ |
| Average | $O(n \log(n))$ |
| Worst   | $O(n \log(n))$ |

### Selection Sorting



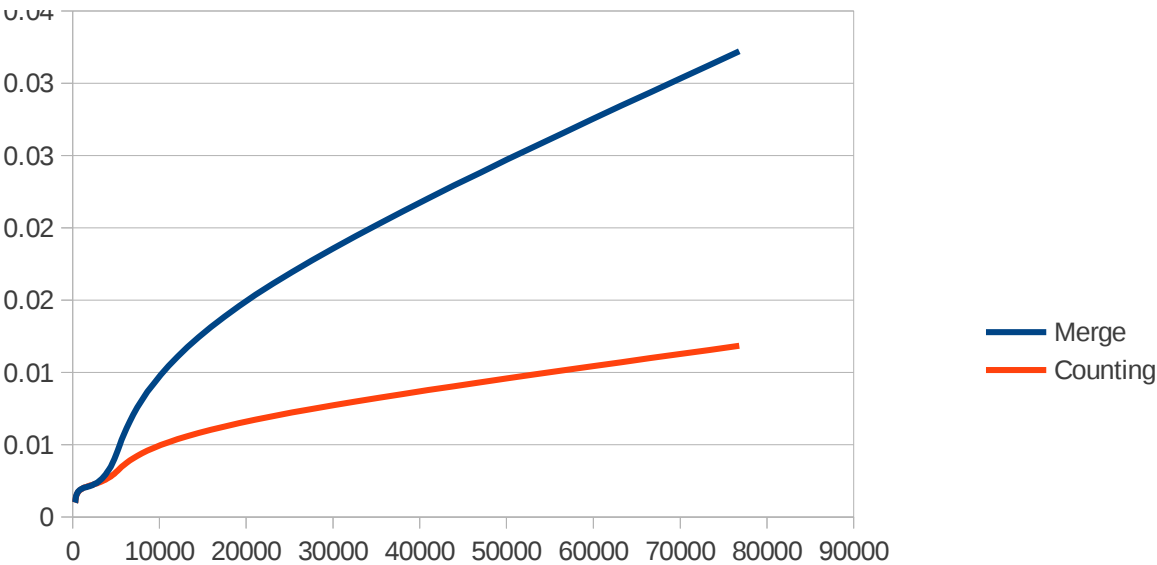
Time

| Elements | Time   |
|----------|--------|
| 300      | 0.002  |
| 1200     | 0.0112 |
| 4800     | 0.091  |
| 19200    | 1.0128 |
| 76800    | 10.373 |

Time Constraints:

| Case    | Order    |
|---------|----------|
| Best    | $O(n^2)$ |
| Average | $O(n^2)$ |
| Worst   | $O(n^2)$ |

COMPARISION BETWEEN MERGE AND COUNTING SORT



| Elements | Merge  | Counting |
|----------|--------|----------|
| 300      | 0.001  | 0.001    |
| 1200     | 0.002  | 0.002    |
| 4800     | 0.004  | 0.003    |
| 19200    | 0.0146 | 0.0065   |
| 76800    | 0.0322 | 0.01184  |

