

# CS2023 - Data Structures and Algorithms

## In-class Lab Exercise - Week 4

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### Time taken for each algorithm

```
Recursive Merge Sort
No. of elements Time
20000           0.003000 s
40000           0.005000 s
60000           0.007000 s
80000           0.010000 s
100000          0.012000 s
```

```
Iterative Merge Sort
No. of elements Time
20000           0.003000 s
40000           0.006000 s
60000           0.006000 s
80000           0.009000 s
100000          0.013000 s
```

| Array Size | Time taken for merge sort (ms) |           |
|------------|--------------------------------|-----------|
|            | Recursive                      | Iterative |
| 20000      | 3                              | 3         |
| 40000      | 5                              | 6         |
| 60000      | 7                              | 6         |
| 80000      | 10                             | 9         |
| 100000     | 12                             | 13        |

The recursive and iterative algorithms have taken roughly the same amount of time.

## Time Graph

