

## DaSE 导论第三周作业

3-8:

```
Sorting array of length: 1000
Selection sort took 0.02035 seconds.
Merge sort took 0.00207 seconds.
Sorting array of length: 2000
Selection sort took 0.07906 seconds.
Merge sort took 0.00400 seconds.
Sorting array of length: 4000
Selection sort took 0.32610 seconds.
Merge sort took 0.00910 seconds.
Sorting array of length: 8000
Selection sort took 1.16519 seconds.
Merge sort took 0.01959 seconds.
Sorting array of length: 16000
Selection sort took 4.87355 seconds.
Merge sort took 0.04155 seconds.
```

归并排序明显比选择排序更加高效，尤其是当处理大规模数据时。当数据规模增加时，归并排序的运行时间增长得较慢，而选择排序的运行时间增长迅速。归并排序的时间复杂度为  $O(n \lg n)$ ，而插入排序的时间复杂度为  $O(n^2)$ ，