Analyzing the Performance of CS 430 Project

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Abstract

200 words maximum

**keywords**：

Introduction

Methodology

This report is to answer those questions:

1、In the same amount of data, the run time of quick sort with median as pivot is better than quick sort which chooses a random element in the array as the pivot

2、 Both of The time complexity of quick sort with median as pivot and The time complexity of quick sort which chooses a random element in the array as the pivot is O(nlgn）

3、In the same amount of data, the run time of order statistics median finding algorithm that use randomized is better than not use randomized

4、The time complexity of randomized median finding algorithm is O(n)

This report main method used:

In the same environment, different algorithms are tested with different data of different orders of magnitude and different characteristics, and the actual running time of the program is recorded

The main data sets include:

positive order data, reverse order data, data generated with randomized, data with a lot of number of same elements, data of different orders of magnitude

Results and Discussions

| **Median Finding** | **randomized(ms)** | **right(ms)** |
| --- | --- | --- |
| positive sort 1k | 0.48 | 93.26 |
| reverse sort 1k | 0.86 | 87.58 |
| random 1k | 0.63 | 0.35 |

| **Quick Sort** | **randomized(ms)** | **right(ms)** |
| --- | --- | --- |
| positive sort 1k | 4.61 | 2.93 |
| reverse sort 1k | 4.35 | 2.69 |
| random 1k | 4.43 | 3.15 |

Conclusion

Reference