Time Complexity report

This report displays the result of the experiment about time complexity using Java’s own time measurement call, System.nanoTime().

# Introduction

# Method

For measurement between appending and concatenation, a string is called when

# Result

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Run  Calls | 1 character | | 80 characters | |
| Appending | Concatenation | Appending | Concatenation |
| 1 | 97,900 | 79,000,100 | 11,100 | 4,299,200 |
| 2 | 98,100 | 79,000,100 | 10,700 | 4,299,200 |
| 3 | 97,800 | 79,000,600 | 11,100 | 4,299,200 |
| 4 | 98,500 | 79,000,600 | 11,300 | 4,299,200 |
| 5 | 97,400 | 79,000,600 | 11,300 | 4,299,200 |
| Average | 97,940 | 79,000,400 | 11,100 | 4,299,200 |

Table 1: Comparison between appending and concatenating string. Time limit: 1 sec. Increment: 100 calls difference.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Run  Calls | Integers | | Strings | |
| Insertion Sort | Merge Sort | Insertion Sort | Merge Sort |
| 1 | 75,510 | 3,560,000 | 5,100 | 260,000 |
| 2 | 75,820 | 4,940,000 | 5,500 | 240,000 |
| 3 | 75,570 | 3,560,000 | 5,500 | 230,000 |
| 4 | 75,800 | 3,560,000 | 5,500 | 230,000 |
| 5 | 75,590 | 3,560,000 | 5,500 | 220,000 |
| Average | 75,658 | 3,836,000 | 5,420 | 236,000 |

Table 2: Comparison between insertion and merge sort on array. Time limit: 1 sec. Increment: 100 items per run.

# Discussion

Based on prior knowledge, it is obvious that

Reliability of the result

There are many factors which could affect the result of the experiment.