**Program Structures & Algorithms**

**Spring 2022**

**Assignment No. 5**

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* **Evidence / Graph**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Array Size: 8000000 |  |  |  |
| Cutoff | Time P=1 | Time P=4 | Time P=16 | Time P=32 |
| 510000 | 4656 | 4616 | 4645 | 4540 |
| 610000 | 4101 | 4109 | 4808 | 4171 |
| 710000 | 4048 | 3716 | 5629 | 4375 |
| 810000 | 4064 | 4059 | 4029 | 4279 |
| 910000 | 3855 | 3949 | 4467 | 4394 |
| 1000000 | 4017 | 4103 | 4045 | 4454 |
|  |  |  |  |  |
|  | Array Size: 4000000 |  |  |  |
| 510000 | 2374 | 2740 | 2585 | 2545 |
| 610000 | 2109 | 2013 | 2161 | 2095 |
| 710000 | 2065 | 2241 | 2423 | 2191 |
| 810000 | 2178 | 2124 | 2282 | 1903 |
| 910000 | 1951 | 1895 | 2155 | 2099 |
| 1000000 | 1892 | 1898 | 2207 | 2149 |

Array Size: 8000000

Array Size: 4000000

* **Conclusion**
* **As Array size increases performance in sorting increases.**
* **When the array size is small, time taken is more to sort, as the array size increases lesser time is taken and then time increases as array size increases by smaller amounts.**
* **For largest cutoff values the least time is taken to sort.**
* **These observations are concluded from 2 different array sizes:** 8000000, 4000000, and threads : 1, 4, 16 and 32.
* **To change parallelisms thread numbers are change in parSort.java**
* **Output Screenshot**

**A computer screen capture

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