IN3030 - oblig1



**Daniel Sharifi – danish**

**Runtimes in ms:**

K = 20

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | n | | | | | |
|  | 1000 | 10000 | 100000 | 1000000 | 10000000 | 100000000 |
| a2 (Sequential) | 0.045751 | 0.264225 | 0.740241 | 0.909879 | 6.801472 | 60.238604 |
| a2 (Parallel) | 0.812722 | 0.878522 | 1.005493 | 0.937123 | 2.63248 | 18.534797 |
| Arrays.sort() | 0.191229 | 0.62972 | 8.321044 | 67.001694 | 778.589931 | 9193.372878 |

K = 100

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | n | | | | | |
|  | 1000 | 10000 | 100000 | 1000000 | 10000000 | 100000000 |
| a2 (Sequential) | 0.251374 | 0.989557 | 0.894457 | 2.167774 | 11.222867 | 74.248681 |
| a2  (Parallel) | 0.946377 | 1.031196 | 1.172047 | 1.617219 | 4.627531 | 24.029026 |
| Arrays.sort() | 0.191229 | 0.62972 | 8.321044 | 67.001694 | 778.589931 | 9193.372878 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | n | | | | | |
|  | 1000 | 10000 | 100000 | 1000000 | 10000000 | 100000000 |
| k = 20 | 0.056293542 | 0.300760823 | 0.736197069 | 0.970928043 | 2.58367471 | 3.250027718 |
| k = 100 | 0.265617191 | 0.959620673 | 0.763157962 | 1.340433176 | 2.425238642 | 3.089957995 |

**Speedup:**

**Computer specifications:**  
CPU:

Intel(R) Core(TM) i7-8550U CPU @ 1.80GHz

Cores: 4

Logical processors: 8

**Comments:**

The parallel code has a speedup > 1 for following combinations of n and k:

* n ≥ 106, k = 20
* n ≥ 107, k = 100.