Activity 1. [problem size]

|  |  |  |
| --- | --- | --- |
| PythonA1 | Computer1 | |
| n | time(ms) | comments |
| 10000 | 1557 |  |
| 20000 | 6510 |  |
| 40000 | 25669 |  |
| 80000 | ------ | Oot |
| 160000 | ------ | Oot |
| 320000 | ------ | Oot |
| 640000 | ------ | Oot |

Activity 2. [computer performance]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CPU1: | 12th Gen Intel(R) Core(TM) i5-12400 2.50 GHz | | | |
| RAM1: | 16,0 GB |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CPU2: | Intel(R) Core(TM) i5-7500 CPU @ 3.40GHz 3.40 GHz | | | |
| RAM2: | 8,00 GB |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PythonA1 | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 1557 |  | 5018 |  |
| 20000 | 6510 |  | 11893 |  |
| 40000 | 25669 |  | 43253 |  |
| 80000 | ------ | Oot | ------ | Oot |
| 160000 | ------ | Oot | ------ | Oot |
| 320000 | ------ | Oot | ------ | Oot |
| 640000 | ------ | Oot | ------ | Oot |

Activity 3. [implementation environment]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| JavaA1(with op) | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 76 |  | 115 |  |
| 20000 | 292 |  | 501 |  |
| 40000 | 1153 |  | 1848 |  |
| 80000 | 4622 |  | 7389 |  |
| 160000 | 18423 |  | 28217 |  |
| 320000 | Oot |  | ------ | Oot |
| 640000 | Oot |  | ------ | Oot |

Activity 4. [algorithm that is used]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PythonA1 | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 1557 |  | 5018 |  |
| 20000 | 6510 |  | 11893 |  |
| 40000 | 25669 |  | 43253 |  |
| 80000 | ------ | Oot | ------ | Oot |
| 160000 | ------ | Oot | ------ | Oot |
| 320000 | ------ | Oot | ------ | Oot |
| 640000 | ------ | Oot | ------ | Oot |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PythonA2 | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 212 |  | 358 |  |
| 20000 | 732 |  | 1559 |  |
| 40000 | 2597 |  | 4431 |  |
| 80000 | 9533 |  | 15788 |  |
| 160000 | 36390 |  | 59346 |  |
| 320000 | ------ | Oot | ------ | Oot |
| 640000 | ------ | Oot | ------ | Oot |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PythonA3 | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 93 |  | 163 |  |
| 20000 | 346 |  | 606 |  |
| 40000 | 1309 |  | 2370 |  |
| 80000 | 4930 |  | 8313 |  |
| 160000 | 18081 |  | 29512 |  |
| 320000 | ------ | Oot | ------ | Oot |
| 640000 | ------ | Oot | ------ | Oot |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| JavaA1(with op) | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 76 |  | 115 |  |
| 20000 | 292 |  | 501 |  |
| 40000 | 1153 |  | 1848 |  |
| 80000 | 4622 |  | 7389 |  |
| 160000 | 18423 |  | 28217 |  |
| 320000 | Oot |  | ------ | Oot |
| 640000 | Oot |  | ------ | Oot |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| JavaA2(with op) | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 10 |  | 16 |  |
| 20000 | 32 |  | 49 |  |
| 40000 | 118 |  | 181 |  |
| 80000 | 416 |  | 709 |  |
| 160000 | 1538 |  | 2601 |  |
| 320000 | 5987 |  | 9424 |  |
| 640000 | 22171 |  | 35626 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| JavaA3(with op) | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 6 |  | 17 |  |
| 20000 | 16 |  | 32 |  |
| 40000 | 58 |  | 101 |  |
| 80000 | 210 |  | 357 |  |
| 160000 | 783 |  | 1369 |  |
| 320000 | 2893 | Oot | 4864 |  |
| 640000 | 10928 | Oot | 17625 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| JavaA1 | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 79 |  | 1542 |  |
| 20000 | 300 |  | 6275 |  |
| 40000 | 1151 |  | 25289 |  |
| 80000 | 4690 |  | ------ | Oot |
| 160000 | 18502 |  | ------ | Oot |
| 320000 | ------ | Oot | ------ | Oot |
| 640000 | ------ | Oot | ------ | Oot |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| JavaA2 | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 11 |  | 1542 |  |
| 20000 | 35 |  | 6275 |  |
| 40000 | 115 |  | 25289 |  |
| 80000 | 418 |  | ------ | Oot |
| 160000 | 1540 |  | ------ | Oot |
| 320000 | 5851 |  | ------ | Oot |
| 640000 | 22175 |  | ------ | Oot |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| JavaA3 | Computer1 | | Computer2 | |
| n | time(ms) | comments | time(ms) | comments |
| 10000 | 5 |  | 1542 |  |
| 20000 | 17 |  | 6275 |  |
| 40000 | 59 |  | 25289 |  |
| 80000 | 207 |  | ------ | Oot |
| 160000 | 769 |  | ------ | Oot |
| 320000 | 2984 |  | ------ | Oot |
| 640000 | 11065 |  | ------ | Oot |

There are not significant differences between the times in java with optimization and without it because the optimization of java is not efficient for these algorithms.

The time spent with Java is much lower than the one spent with Python, this is because of the inner implementation of the languages used.