|              | Student information   | Date       | Number of session         |
|--------------|-----------------------|------------|---------------------------|
|              | UO: UO294515          | 03/02/25   | 0                         |
| Algorithmics | Surname: López García | Escuela de |                           |
|              | Name: Óscar           |            | Ingeniería<br>Informática |



## Activity 1. [Factor 1(problem size)]

| n      | t(ms)  |
|--------|--------|
| 10000  | 1531   |
| 20000  | 6398   |
| 40000  | 25409  |
| 80000  | 102244 |
| 160000 | ОоТ    |
| 320000 | ОоТ    |
| 640000 | ОоТ    |

## Activity 2. [Factor 2 (computer power)]

| n                                   | t(ms)  | n                  | t(ms)         |
|-------------------------------------|--------|--------------------|---------------|
| 10000                               | 1531   | 10000              | 3773          |
| 20000                               | 6398   | 20000              | 13469         |
| 40000                               | 25409  | 40000              | 58798         |
| 80000                               | 102244 | 80000              | ОоТ           |
| 160000                              | OoT    | 160000             | ОоТ           |
| 320000                              | OoT    | 320000             | ОоТ           |
| 640000                              | OoT    | 640000             | ОоТ           |
| CPU: 12th Gen Intel(R) Core(TM) i5- |        | CPU: Intel(R) Core | e(TM) i7-3770 |
| 12400 2.50 GHz                      |        | CPU @ 3.40GHz      | 3.40 GHz      |
| RAM: 16,                            | ,0 GB  | RAM: 16,0 GB       |               |

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|              | Student information   | Date     | Number of session |
|--------------|-----------------------|----------|-------------------|
|              | UO: UO294515          | 03/02/25 | 0                 |
| Algorithmics | Surname: López García |          |                   |
|              | Name: Óscar           |          |                   |

## Activity 3. [Factor 3 (implementation environment)]

| n      | t(ms) |
|--------|-------|
| 10000  | 137   |
| 20000  | 547   |
| 40000  | 2075  |
| 80000  | 8070  |
| 160000 | 31216 |
| 320000 | ОоТ   |
| 640000 | ОоТ   |

These times are much faster than the ones for the python problam, this is due to the JVM.

## Activity 4. [Factor 4 (algorithm that is used)]

|        | Python  |         |         |  |
|--------|---------|---------|---------|--|
| n      | A1 (ms) | A2 (ms) | A3 (ms) |  |
| 10000  | 1531    | 447     | 227     |  |
| 20000  | 6398    | 1568    | 834     |  |
| 40000  | 25409   | 6033    | 3244    |  |
| 80000  | 102244  | 21951   | 12139   |  |
| 160000 | ОоТ     | 101154  | 51960   |  |
| 320000 | ОоТ     | ОоТ     | ОоТ     |  |
| 640000 | ОоТ     | ОоТ     | ОоТ     |  |

| Java (without optimization) |     |    |    |  |
|-----------------------------|-----|----|----|--|
| n A1(ms) A2 (ms) A3 (ms)    |     |    |    |  |
| 10000                       | 667 | 74 | 72 |  |

|              | Student information   | Date     | Number of session |
|--------------|-----------------------|----------|-------------------|
| Alexander    | UO: UO294515          | 03/02/25 | 0                 |
| Algorithmics | Surname: López García |          |                   |
|              | Name: Óscar           |          |                   |

| 20000  | 2791  | 494   | 149   |
|--------|-------|-------|-------|
| 40000  | 12493 | 1182  | 550   |
| 80000  | 50884 | 3689  | 2251  |
| 160000 | ОоТ   | 14698 | 7845  |
| 320000 | ОоТ   | 49633 | 30544 |
| 640000 | ОоТ   | ОоТ   | 19643 |

| Java (with optimization) |         |         |         |
|--------------------------|---------|---------|---------|
| n                        | A1 (ms) | A2 (ms) | A3 (ms) |
| 10000                    | 137     | 22      | 15      |
| 20000                    | 547     | 51      | 28      |
| 40000                    | 2075    | 194     | 111     |
| 80000                    | 8070    | 783     | 394     |
| 160000                   | 31216   | 2691    | 1417    |
| 320000                   | OoT     | 10107   | 5482    |
| 640000                   | ОоТ     | 38074   | 19643   |