

| Algorithmics | Student information | Date | Number of session |
|--------------|-------------------------|------------|-------------------|
| | UO: 293693 | 08/02/2024 | 0 |
| | Surname: Castro Álvarez | | |
| | Name: Ana | | |



Escuela de
Ingeniería
Informática
Universidad de Oviedo



Activity 2. Factor 1: problem size

RAM: 8 GB

CPU: Intel Core i7-4790 3.6 GHz

| N | Time |
|--------|--------|
| 10000 | 2,427 |
| 20000 | 9,693 |
| 40000 | 39,743 |
| 80000 | OoT |
| 160000 | OoT |
| 320000 | OoT |
| 640000 | OoT |

Activity 3. Factor 2: computer performance

RAM: 8 GB

CPU: Intel Core i7-4790 3.6 GHz

| N | Time |
|--------|--------|
| 10000 | 2,671 |
| 20000 | 10,587 |
| 40000 | 42,901 |
| 80000 | OoT |
| 160000 | OoT |
| 320000 | OoT |
| 640000 | OoT |

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Activity 4. Factor 3: implementation environment

| N | Time Java | Time Python |
|--------|-----------|-------------|
| 10000 | 0,124 | 2,427 |
| 20000 | 0,472 | 9,693 |
| 40000 | 1,852 | 39,743 |
| 80000 | 7,055 | OoT |
| 160000 | 30,120 | OoT |
| 320000 | OoT | OoT |
| 640000 | OoT | OoT |

The times in Java are significantly better than those in Python as Java has built-in improvements

Activity 4. Factor 4: algorithm that is used

| N | Time PythonA1 | Time PythonA2 | Time PythonA3 |
|--------|---------------|---------------|---------------|
| 10000 | 2,427 | 2,671 | 0,124 |
| 20000 | 9,693 | 10,587 | 0,472 |
| 40000 | 39,743 | 42,901 | 1,852 |
| 80000 | OoT | OoT | 7,055 |
| 160000 | OoT | OoT | 30,120 |
| 320000 | OoT | OoT | OoT |
| 640000 | OoT | OoT | OoT |

| N | Time JavaA1 | Time JavaA2 | Time JavaA3 |
|-------|-------------|-------------|-------------|
| 10000 | 0,124 | 0,300 | 0,139 |
| 20000 | 0,472 | 1,176 | 0,517 |
| 40000 | 1,852 | 3,905 | 2,132 |
| 80000 | 7,055 | 15,342 | 7,577 |

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| | | | |
|--------|--------|--------|--------|
| 160000 | 30,120 | 57,923 | 30,116 |
| 320000 | OoT | OoT | OoT |
| 640000 | OoT | OoT | OoT |

Without optimizations

| N | Time JavaA1 | Time JavaA2 | Time JavaA3 |
|--------|-------------|-------------|-------------|
| 10000 | 1,239 | 0,124 | 0,083 |
| 20000 | 4,521 | 0,478 | 0,271 |
| 40000 | 17,212 | 1,810 | 0,921 |
| 80000 | OoT | 6,627 | 3,863 |
| 160000 | OoT | 24,597 | 13,748 |
| 320000 | OoT | OoT | 48,122 |
| 640000 | OoT | OoT | OoT |