Algorithmics	Student information	Date	Number of session
	UO: 300829	06/02/2025	0
	Surname: Cid Lazcano		
	Name: Izan		

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Activity 1. Factor 1 (Problem size)

Python A1	
n	**Ex. Time (ms)**
10000	1936
20000	7757
40000	30641
80000	OoT
160000	OoT
320000	OoT
640000	OoT

Activity 2. Factor 2 (Computer power)

	Python A1 Computer 1	Python A1 Computer 2
n	**Ex. Time C1 (ms)**	**Ex. Time C2 (ms)**
10000	1936	1223
20000	7757	4926
40000	30641	19633
80000	OoT	OoT
160000	OoT	OoT
320000	OoT	OoT
640000	OoT	OoT

- **Computer 1 specs:**
  - 13th Gen Intel(R) Core(TM) i7-1360P 2.20 GHz
  - 16GB Ram
- **Computer 2 specs:**
  - 12th Gen Intel(R) Core(TM) i7-12700KF 3.61GHz
  - 32GB Ram

Activity 3. Factor 3 (Implementation environment)

Java A1 with JIT disabled	
n	**Ex. Time (ms)**
10000	483
20000	1935
40000	7130
80000	29037
160000	OoT
320000	OoT
640000	OoT

The times achieved with Java implementation are faster than with Python, this is mainly due to Java's compiled nature against Python's interpreted execution.

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Activity 4. Factor 4 (Algorithm that is used)

Python Algorithms in Computer 1			
n	**Ex. Time A1 (ms)**	**Ex. Time A2 (ms)**	**Ex. Time A3 (ms)**
10000	1936	217	125
20000	7757	871	463
40000	30641	3208	1577
80000	OoT	11557	5989
160000	OoT	44389	22302
320000	OoT	OoT	OoT
640000	OoT	OoT	OoT

Java Algorithms in Computer 1 with JIT disabled			
n	**Ex. Time A1 (ms)**	**Ex. Time A2 (ms)**	**Ex. Time A3 (ms)**
10000	483	50	25
20000	1935	207	92
40000	7130	771	400
80000	29037	2757	1412
160000	OoT	10049	5119
320000	OoT	38454	20100
640000	OoT	OoT	OoT

Java Algorithms in Computer 1 with JIT enabled			
n	**Ex. Time A1 (ms)**	**Ex. Time A2 (ms)**	**Ex. Time A3 (ms)**
10000	98	12	6
20000	407	48	20
40000	1581	175	94
80000	6447	605	309
160000	25269	2261	1145
320000	OoT	8404	4268
640000	OoT	31719	15981

As said before Java executions times are always shorter than Python's, even without JIT optimization, mainly because of their compiled vs interpreted natures but also because of memory management issues or Python's higher level of abstraction.

It is important to remark the difference Java's optimization implies, being even 4 times faster when JIT is enabled.