


Algorithmics	Student information	Date	Number of session
	UO: 301879	6/02/2025	0
	Surname: Sariego Sánchez		
	Name: Martín		



Escuela de
Ingeniería
Informática
Universidad de Oviedo



Universidad de Oviedo
Universidá d'Uviéu
University of Oviedo

Activity 1. Factor 1: problem size

Factor1	n	10000	20000	40000	80000	160000	320000	640000
	t(ms)	1528	6212	25447	Oot	Oot	Oot	Oot

This algorithm's complexity is $O(n^2)$, so the time increases depending on the increase of the problem size. N is multiplied by 2 so time will multiply by 4 (2^2).

Activity 2. Factor 2: computer performance

Factor2	n	10000	20000	40000	80000	160000	320000	640000
	t(ms) C1	1528	6212	25447	Oot	Oot	Oot	Oot
	t(ms) C2	3562	13876	55217	Oot	Oot	Oot	Oot

C1(lab)		C2(home)	
CPU	i5-12400	CPU	i3-7100
RAM	16,0 GB	RAM	8,0 GB

Activity 3. Factor 3: implementation environment

Factor3	n	10000	20000	40000	80000	160000	320000	640000
JavaA1	t(ms)	310	1234	4918	19817	Oot	Oot	Oot
PythonA1	t(ms)	1528	6212	25447	Oot	Oot	Oot	Oot

Algorithmics	Student information	Date	Number of session
	UO: 301879	6/02/2025	0
	Surname: Sariego Sánchez		
	Name: Martín		

Activity 4. Factor 4: algorithm that is used

Factor4	n	10000	20000	40000	80000	160000	320000	640000
Python	t(ms)A1	1528	6212	25447	Oot	Oot	Oot	Oot
	t(ms)A2	182	676	2569	9866	37146	Oot	Oot
	t(ms)A3	96	340	1269	4890	18059	Oot	Oot

Factor4	n	10000	20000	40000	80000	160000	320000	640000
Java	t(ms)A1	310	1234	4918	19817	Oot	Oot	Oot
NO opt.	t(ms)A2	38	131	483	1807	6810	25819	Oot
	t(ms)A3	21	73	258	937	3539	13341	50984

Factor4	n	10000	20000	40000	80000	160000	320000	640000
Java	t(ms)A1	76	280	1110	4429	17729	Oot	Oot
WITH opt.	t(ms)A2	9	31	112	414	1542	5855	22065
	t(ms)A3	6	17	57	213	793	2940	11103

From these results, we conclude that while other factors also influence the execution time of the program, it is the algorithms and data structures used that have the greatest impact, and they are also the easiest to improve, as they depend on the developer, unlike computer performance, for example.