

Algorithmics	Student information	Date	Number of session
	UO: 284185	22/3/2022	5
	Surname: Fernández-Catuxo Ortiz		
	Name: Rita		



Activity 1. Create a table with the times

N	T Levenshtein (microseconds)
400	96
800	343
1600	1328
3200	5909
6400	23279
12800	88822

- What is the complexity of the algorithm?

The result complexity of the algorithm is the length of the first string times the length of the second string --> $O(\text{len}(\text{string1}) * \text{len}(\text{string2}))$

- Do the empirical results make sense?

We know that $t_2 = (f(n_2) / f(n_1)) \times t_1$. As we are taking measurements with words that have the same length, the complexity would be $\text{length}(n) * \text{length}(n) = \text{length}(n)^2$ and therefore, square. Thus, $f(n) = n^2$

According to the following results, we can conclude that the values obtained meet the theoretical complexity of the algorithm and thus, they make sense:

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Taking this values:

$$n1 = 800 \quad t1 = 343$$

$$n2 = 1600 \quad t2 = 1328$$

$$t2 = (1600^2/800^2) \times 343 = 1372 \approx 1328$$

Taking this values:

$$n1 = 3200 \quad t1 = 5909$$

$$n2 = 6400 \quad t2 = 23279$$

$$t2 = (12800^2/6400^2) \times 5909 = 23636 \approx 23279$$