Algorithmics	Student information	Date	Number of session
	UO:269546	10-03-21	3_2
	Surname: Fernández Arias		
	Name: Sara		

Activity 1. Counting inversions.

file	t O(n2)	t O(nlog)	t O(n2)/t O(nlogn)	n inversions
Ranking1.txt	52	4	13	14.074.466
Ranking2.txt	168	3	56	56.256.142
Ranking3.txt	628	5	125,6	225.312.650
Ranking4.txt	2240	11	203,6363636	903.869.574
Ranking5.txt	16765	17	986,1764706	3.613.758.061
Ranking6.txt	88970	40	2224,25	14.444.260.441
Ranking7.txt	477398	207	2306,270531	57.561.381.803

For O(n^2) having that the time obtained for the size of ranking4 I,n1= 60.000 ,

60000 43046

Was t1=2240ms.

Provided that the size of ranking 5 is n2=120.000

120000 89687

The time expected for n2 will be the following:

Provided that k = n2/n1=120.000/60.000=2

Being that T2=$\frac{f(n2)}{f(n1)}xT1$, so T2=$\frac{n2^2}{n1^2}x\ t1 = k^2xT1 = 2^2 * 2240 = 8.969$

The values aren't expected!, actually , the value empirically obtained was almost the double.

For O(nlogn) I only obtained a value significant enough to be taken into account .

It's the 207ms taken for executing inversions in ranking7.

Having a look at the overall set of values obtained for this complexity, they are expected in the sense that they are significantly smaller and grow slower than the ones of O(n^2)

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