Algorithmics	Student information	Date	Number of session
	UO: 282276	27/02/2022	4
	Surname: Cadenas Blanco		
	Name: Andrés		

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Activity 1. Time measurements for sorting algorithms.

[ANSWER].

Algorithm:	Bubble		
N	Sorted	Inverse	Random
10000	9880	6165	11081
20000	39147	24154	49867
40000	163778	98625	211182
80000	521218	393854	
160000	-		

This algorithm does meet all the conditions as the complexity is n squared in all the cases, as it happened here. I had to stop measuring because the times were increasing really fast.

Algorithm:	Insertion		
N	Sorted	Inverse	Random
10000	12	1774	841
20000	4	6822	3127
40000	5	25836	12659
80000	20	104728	50648

Insertion methos is the only one of the three worse one that has a better complexity in the best-case scenario this can be seen in the times shown in the table. And in general it got me the impression that even though the theoretical complexity is the same is a bit faster than the three others.

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Algorithm:	Selection		
N	Sorted	Inverse	Random
10000	11490	3142	1340
20000	45697	11504	4594
40000	182487	45476	17653

This method meets the expected complexity.

I did not add the quicksort because I faced some issues when trying to measure and I was not able to find the error. Also note that the sorted was done with power saving on so that is why some of them would be faster when inversed like selection sort.

Activity 2. Quicksort Fateful

I think that when you take the leftmost value as pivot it is only a good choice when random values are taken, but the moment the numbers start getting bigger it is more probable that it will choose a bad number. That is why we take the median, as that ensures the pivot will be closer to all the different numbers rather than taking a random number, which is what we do when taking the first element.