

## Laboratory practice No. 2: Complete the title of the laboratory practice

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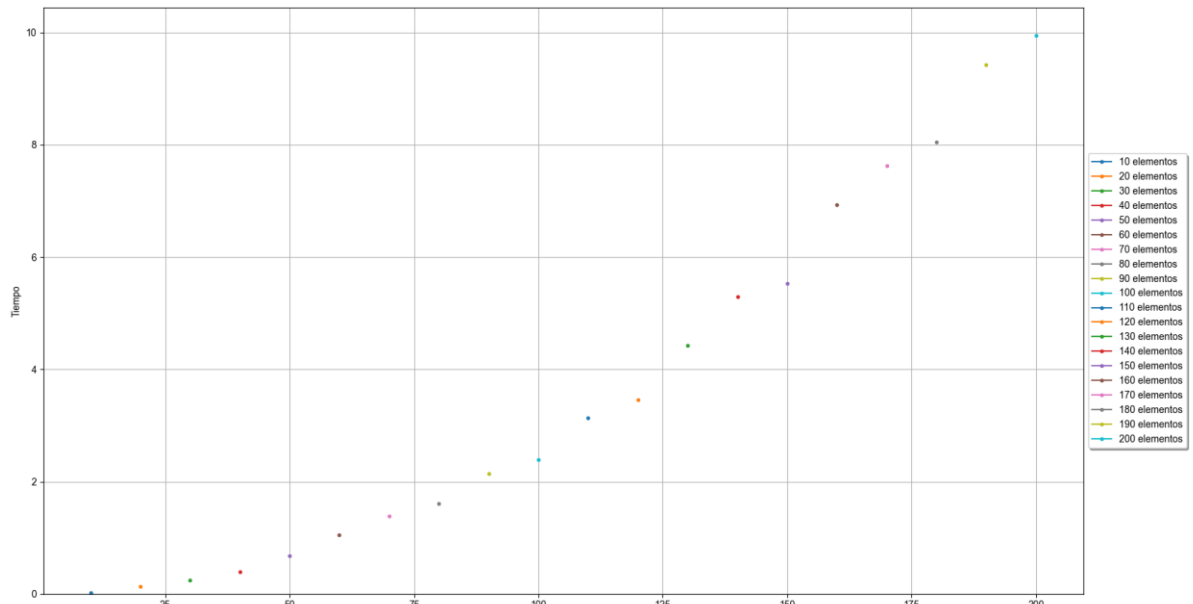
### 3) Practice for final project defense presentation

3.1

3.2

Insertion

insertionSort



Merge

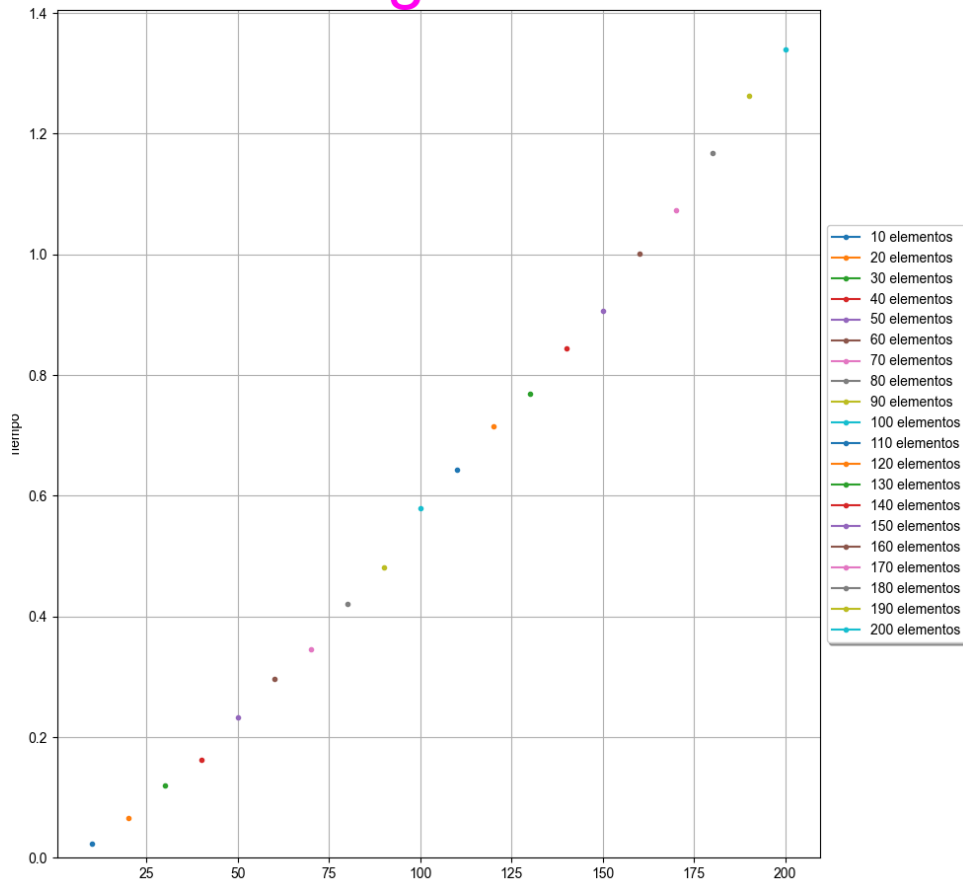
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## Merge Sort



3.3 It wouldn't be appropriate as in games we would need to process millions of elements in seconds and insertion sort being an exponential algorithm would rapidly increase the necessary processing time.

3.4 Because the algorithm divides the array in equal length subarray until the length of said arrays becomes 1. This in terms of time complexity takes  $\log(n)$  time. After this, the algorithm has to merge these all of these arrays in a an ordered fashion, taking up  $O(n)$  operations. The multiplication of both of these complexities results in  $n \log n$  time complexity.

3.5

- Array 2

- FizzArray:  $O(n)$
- IsEverywhere:  $O(n)$
- FizzBuzz:  $O(n)$
- MatchUp:  $O(n)$
- Sum28:  $O(n)$

- Array 3

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**ESTRUCTURA DE DATOS 1**  
Código ST0245

- **MaxSpan:  $O(n)$**
- **CanBalance:  $O(n)$**
- **SeriesUp:  $O(n)$**
- **LinearIn:  $O(n + m)$**
- **SquareUp:  $O(n^2)$**

**3.6** In the previous analysis,  $n$  refers to the size of the input arrays, for the case of the linearIn problem,  $m$  refers to the size of the secondary array.

#### **4) Practice for midterms**

**4.1** 10 segundos

**4.2** d)  $O(N \times M)$

**4.3** a)  $O(n^3)$

**4.4**  $O(N \times M)$ ,  $O(N \times M)$

**4.5** d)  $T(n/10) + c$  que es  $O(\log_{10} n)$ , Si, siempre acaba para numeros enteros.

#### **5) Recommended reading (optional)**

Mapa conceptual

#### **6) Team work and gradual progress (optional)**

**6.1** Meeting minutes

**6.2** History of changes of the code

**6.3** History of changes of the report

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