# Práctica 1

## Análisis Empírico e Híbrido de Eficiencia de Algoritmos

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# Índice

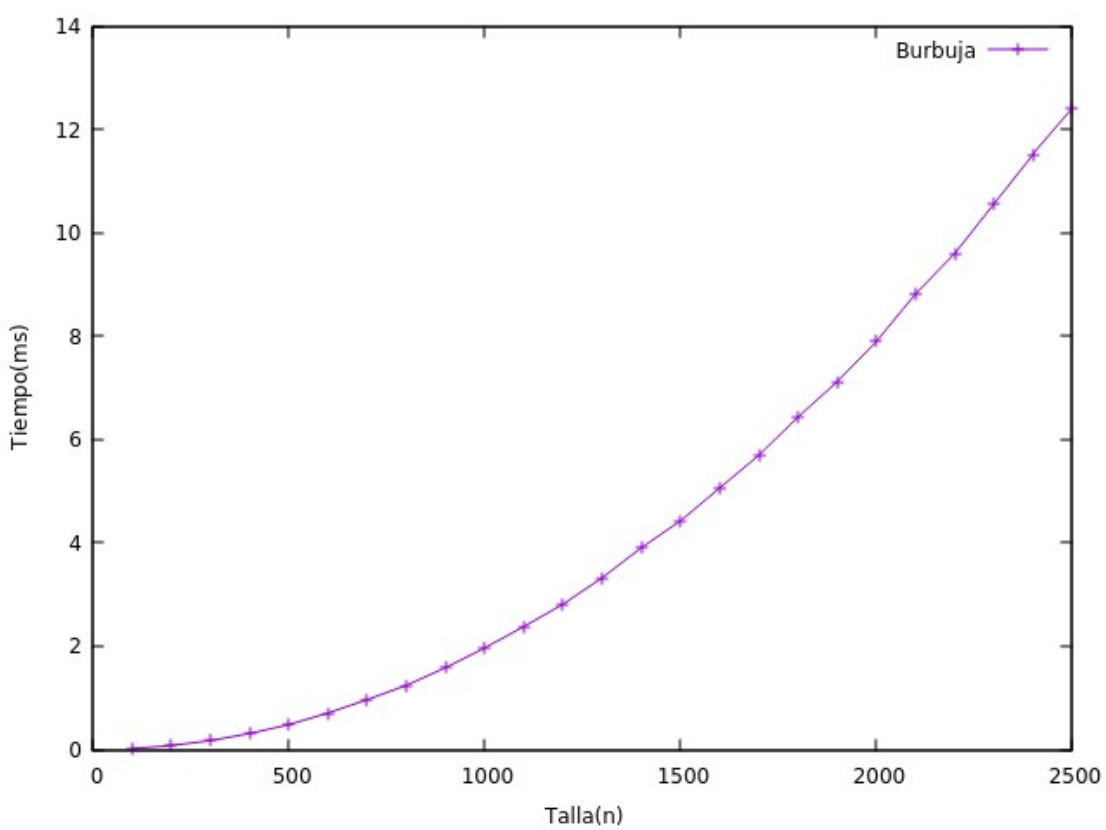
# 2. Complejidad o($n^2$)

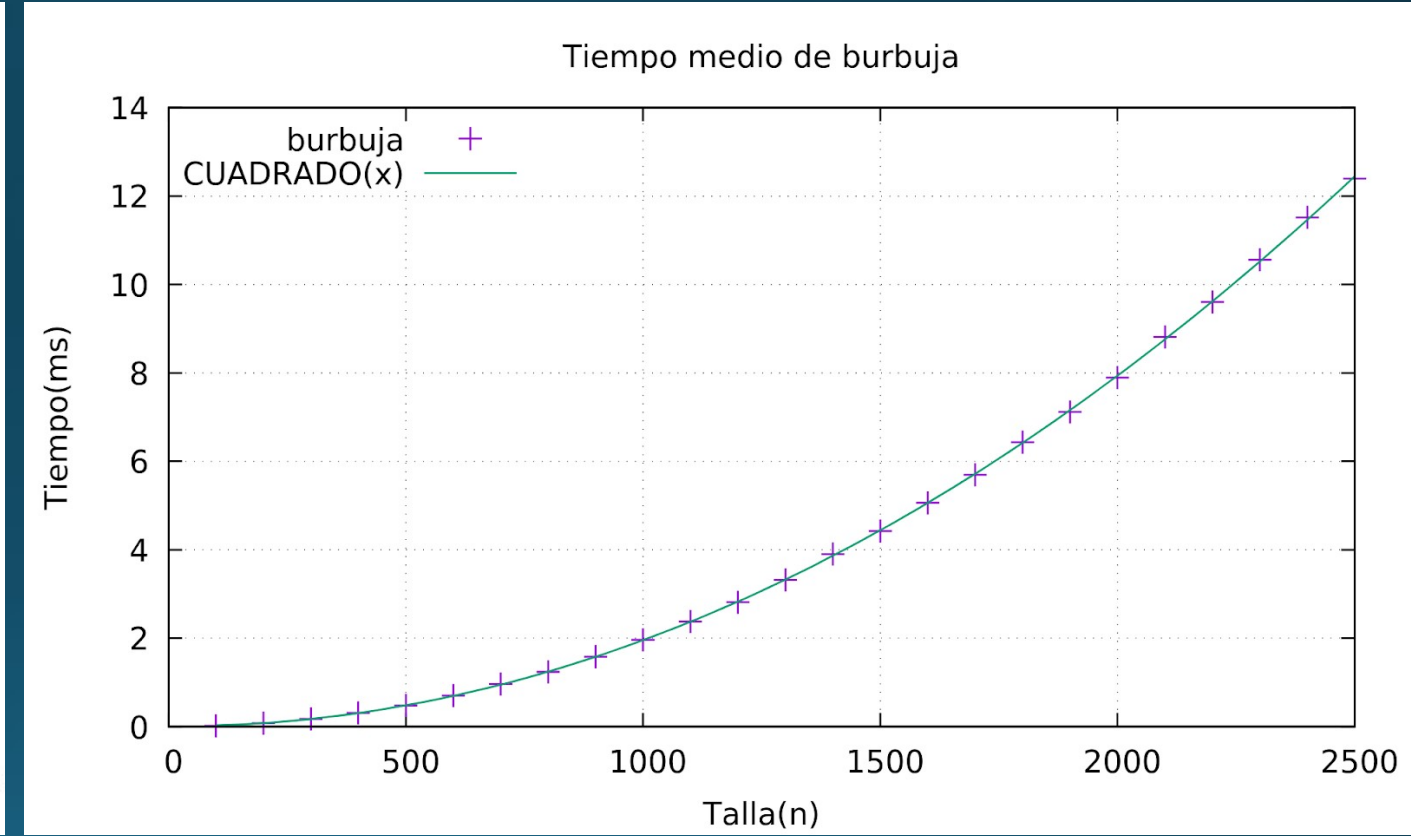
El ajuste se realiza con
$T(n) = a*n^2 + b*n + c$

Vamos a ver los siguientes algoritmos:

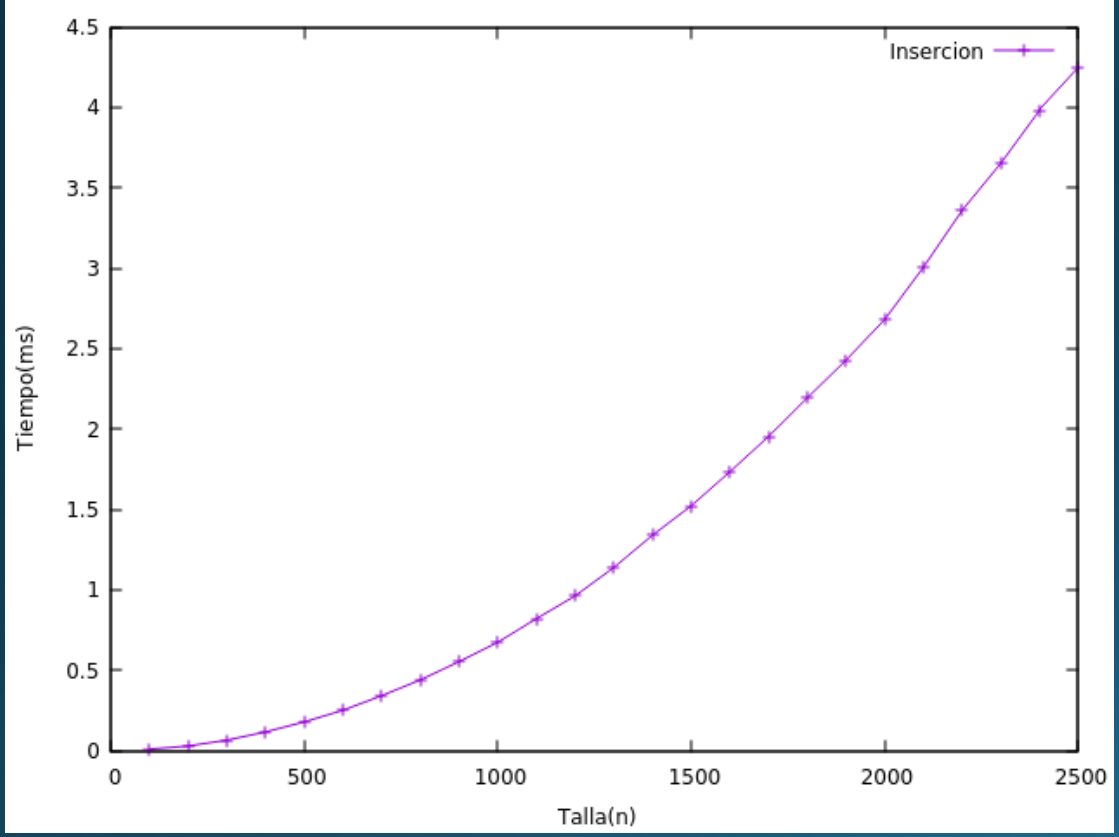
- Burbuja
- Inserción
- Selección

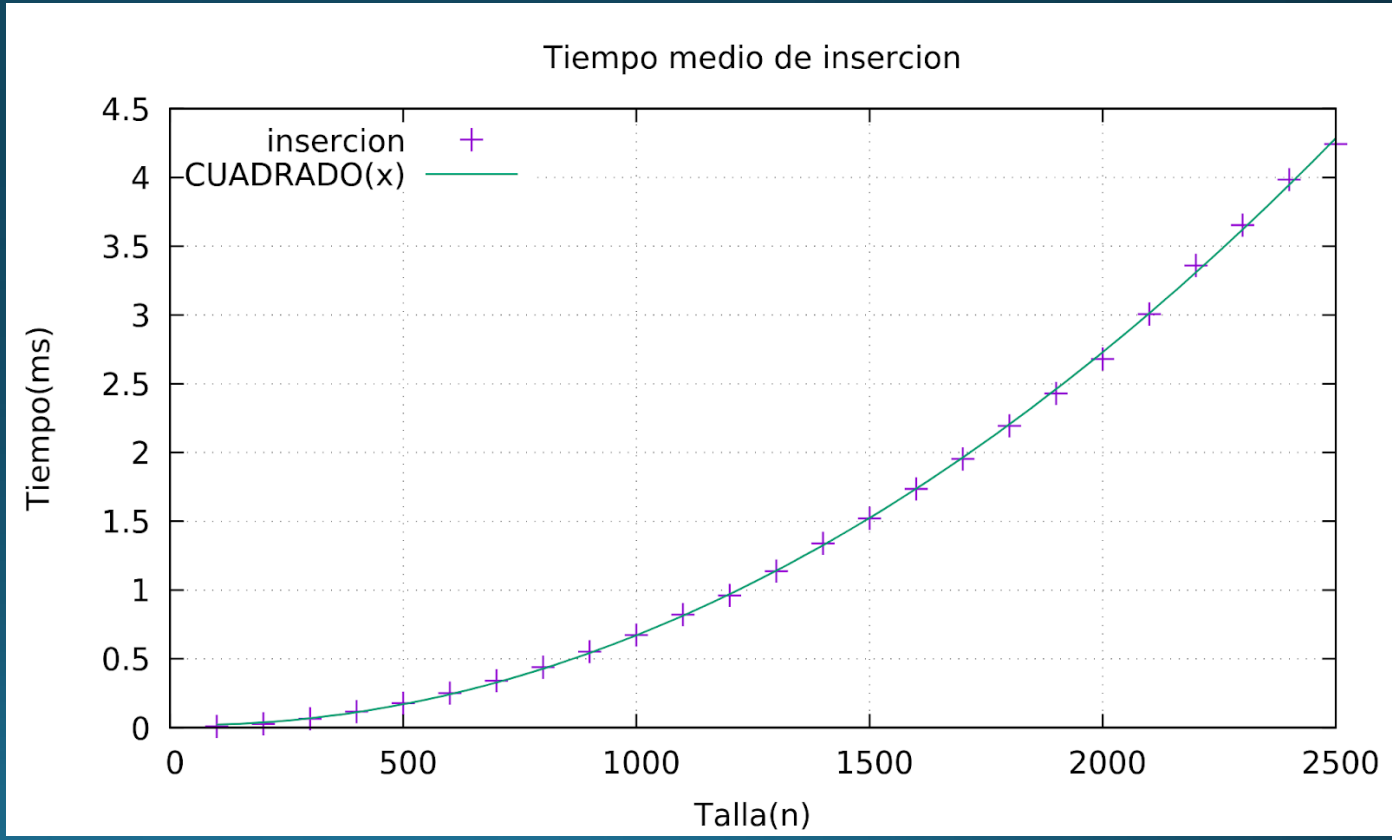
# 2.1. Burbuja


Burbuja
Tiempo(ms)
Talla(n)
0
2
4
6
8
10
12
14
0
500
1000
1500
2000
2500

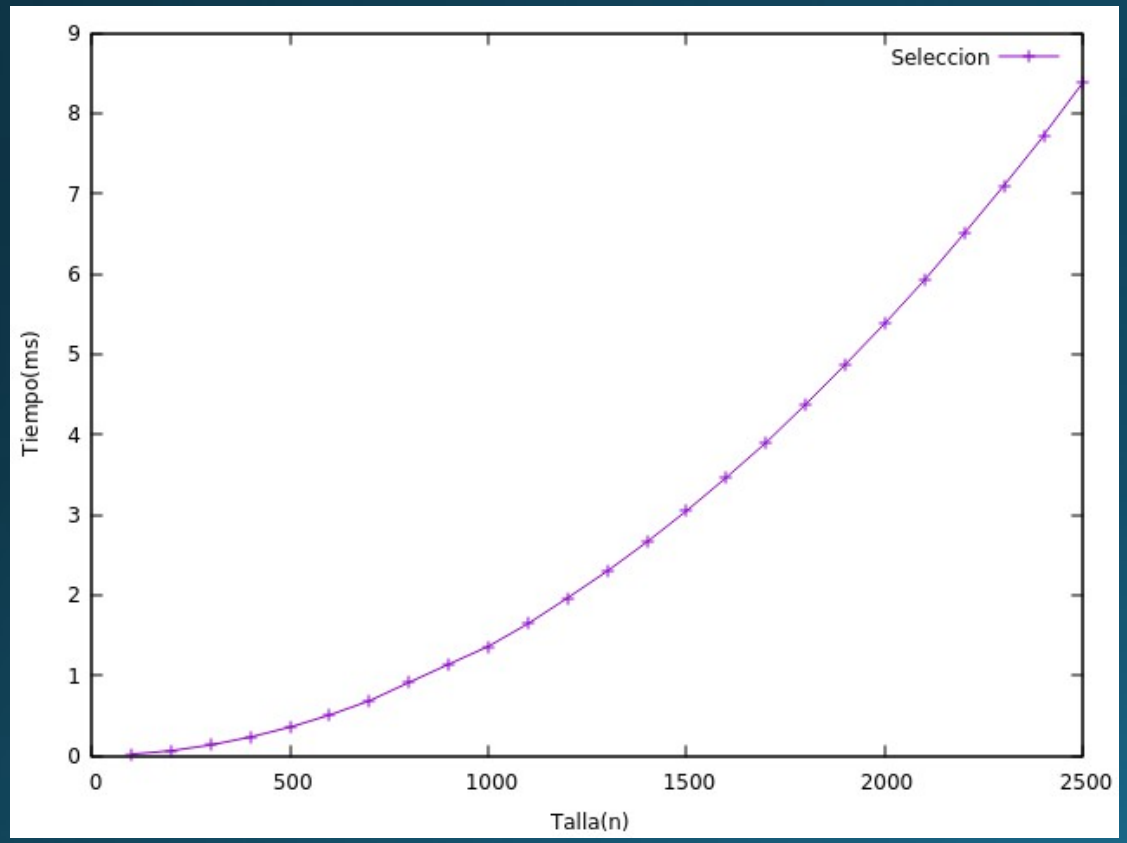

Tiempo medio de burbuja
burbuja
CUADRADO(x)
Tiempo(ms)
Talla(n)
0
2
4
6
8
10
12
14
0
500
1000
1500
2000
2500

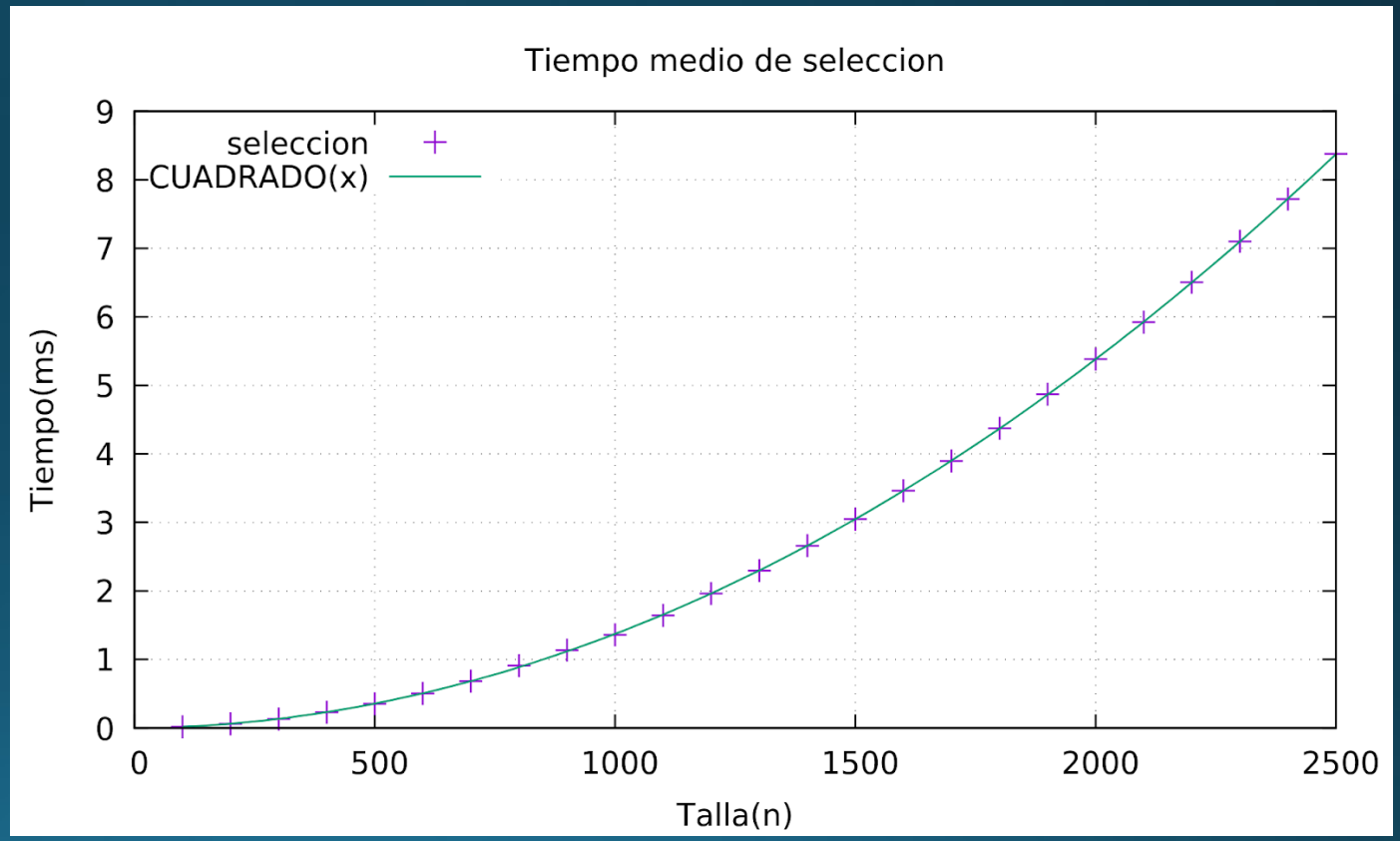
# 2.2 Inserción



# 2.3. Selección



# 3. Complejidad O(nlog(n))

El ajuste se realiza con $T(n) = a*n*\log(n) + b$

Estos algoritmos tienen una mayor complejidad pero son más eficientes

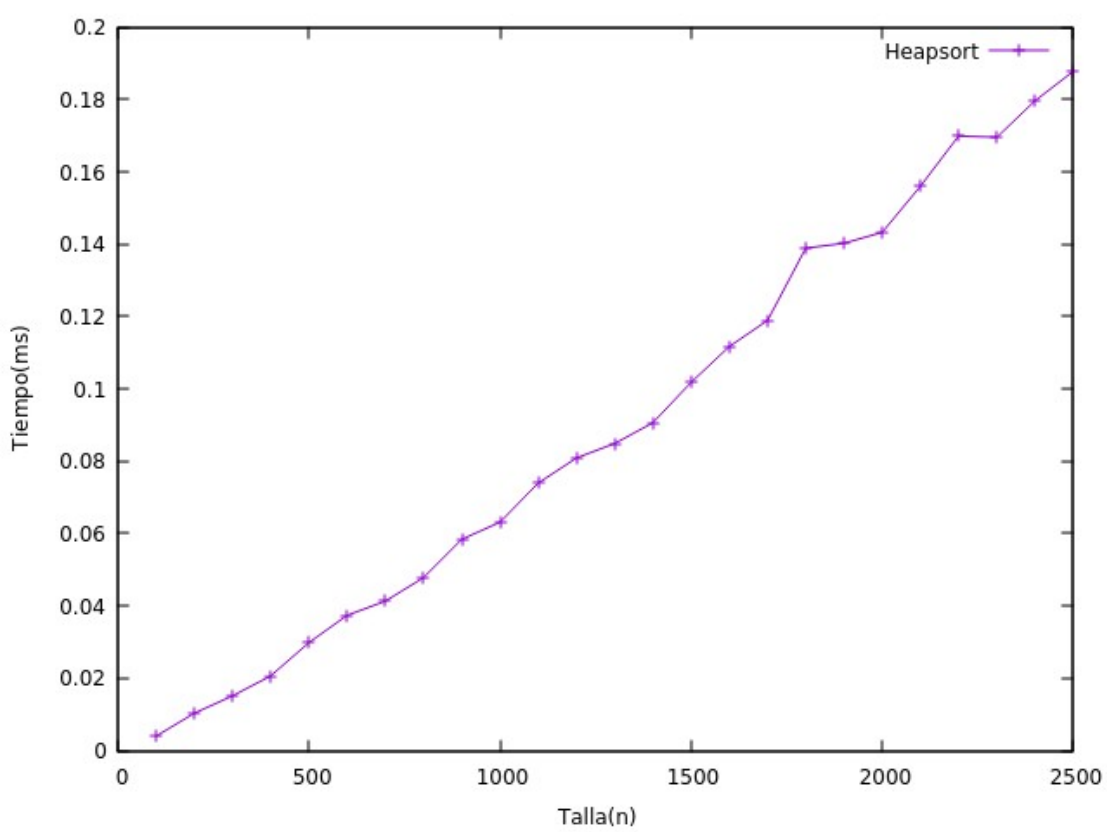
Vamos a ver los siguientes algoritmos:

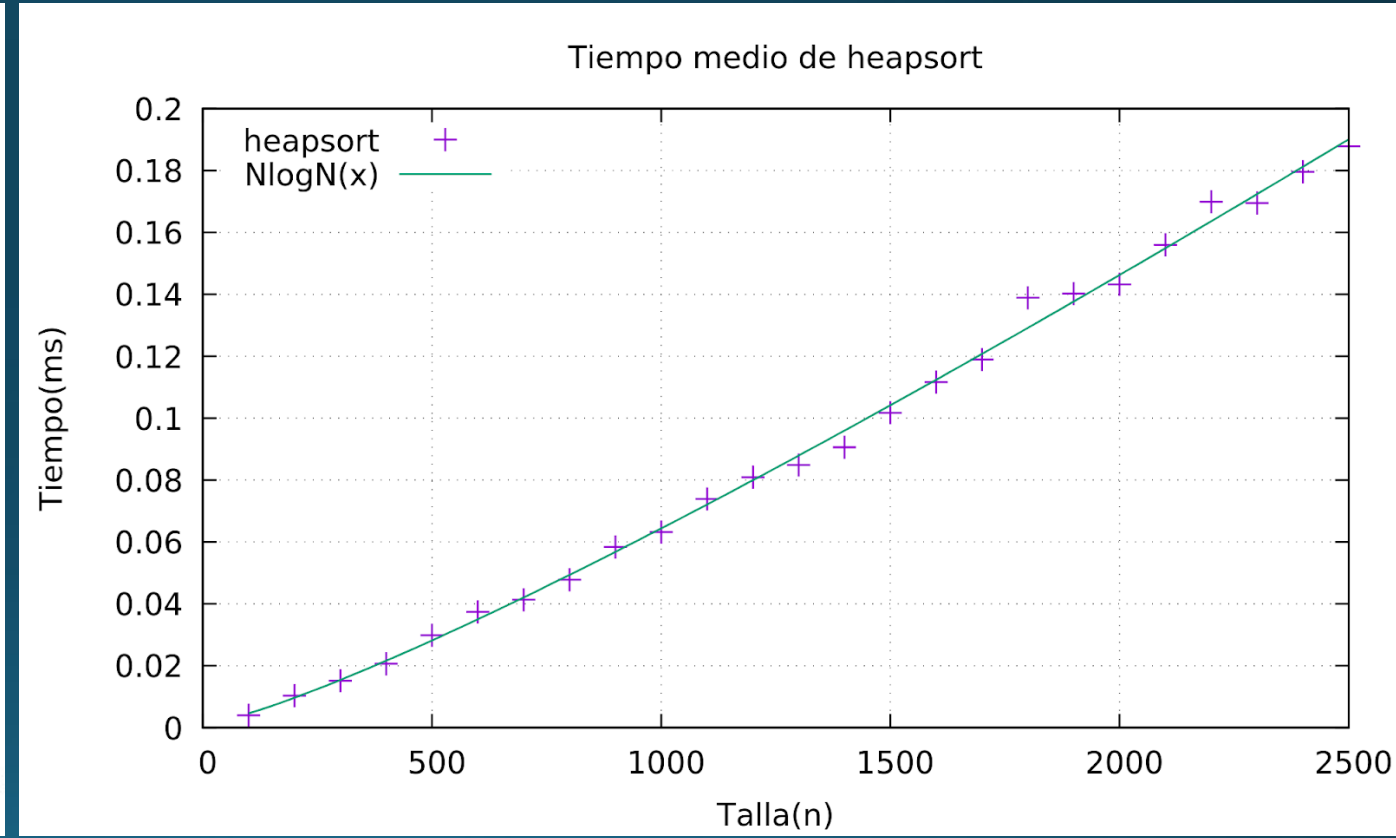
-Heapsort

-Mergesort

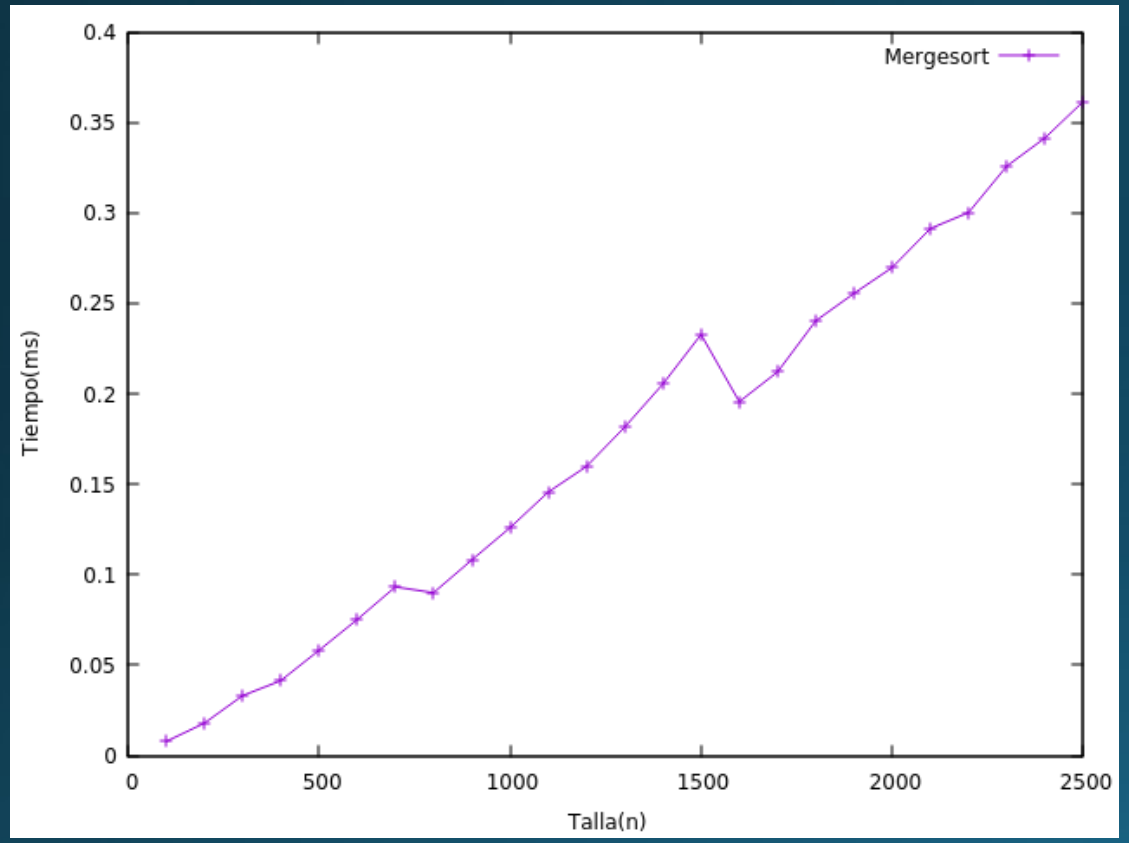
-Quicksort

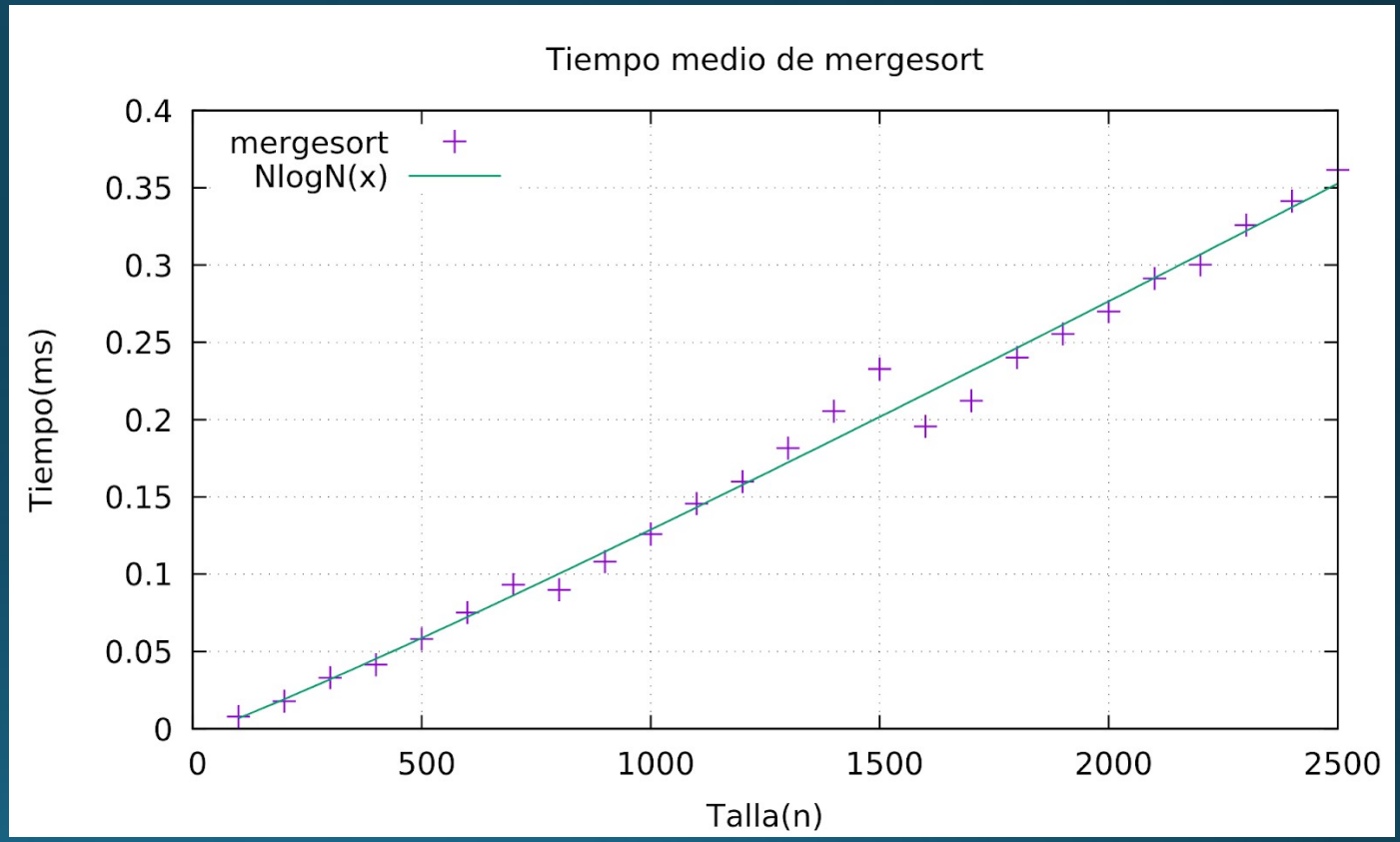
# 3.1. Heapsort


Heapsort
Tiempo(ms)
Talla(n)
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0
500
1000
1500
2000
2500

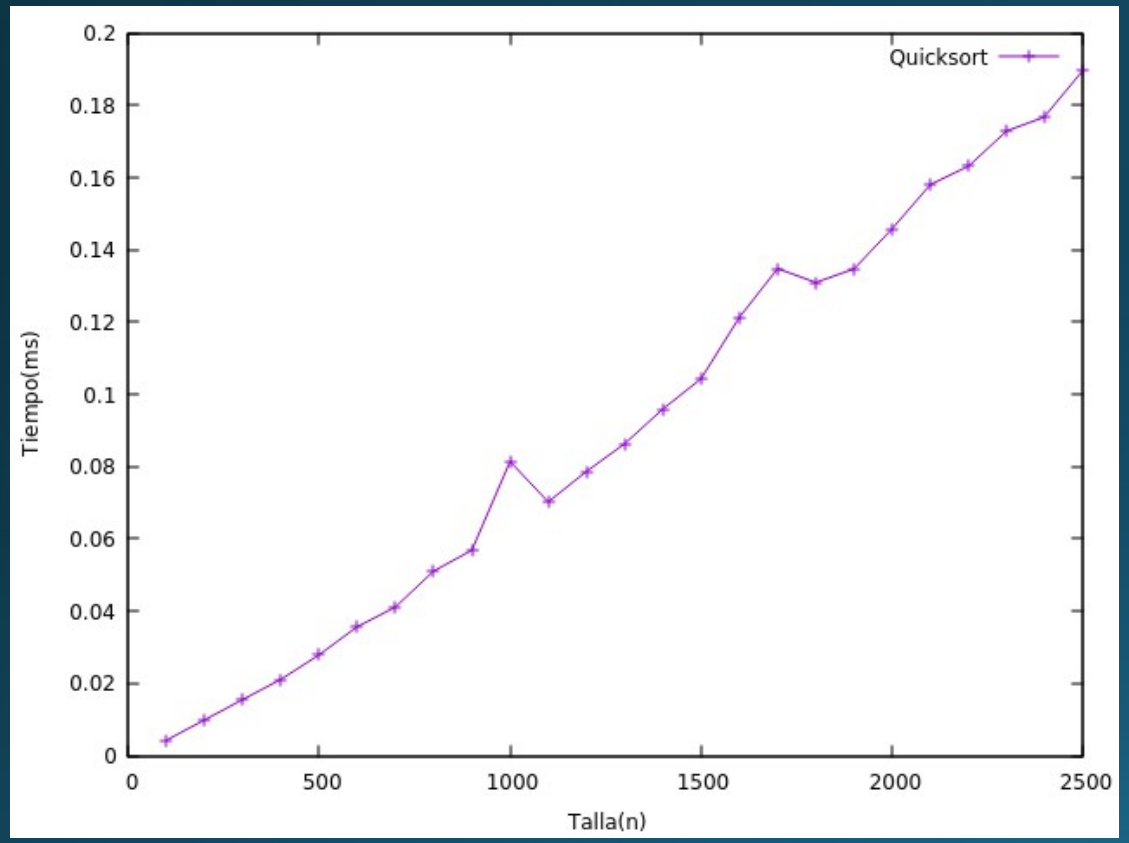

Tiempo medio de heapsort
heapsort
NlogN(x)
Tiempo(ms)
Talla(n)
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0
500
1000
1500
2000
2500

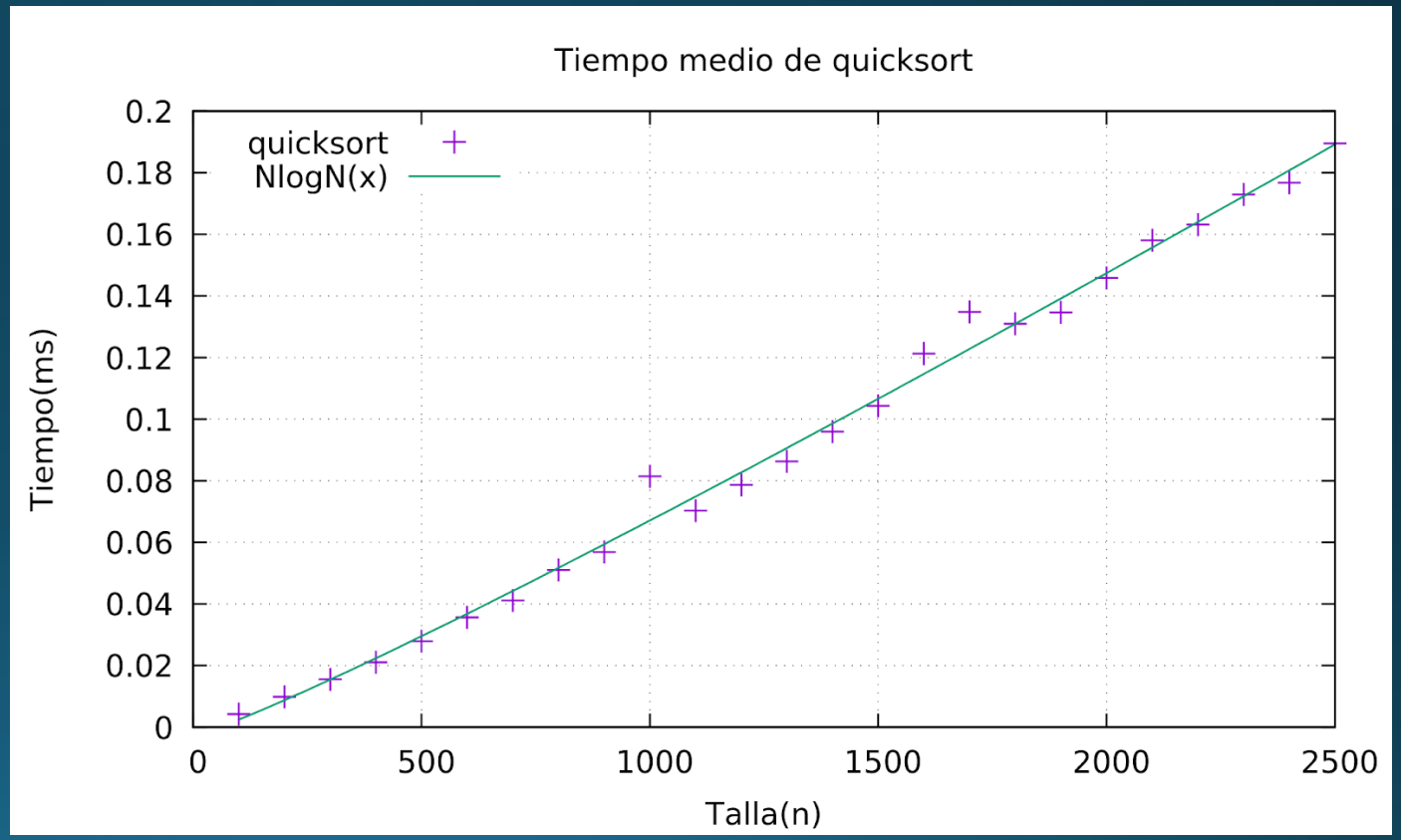
# 3.2. Mergesort



# 3.3. Quicksort

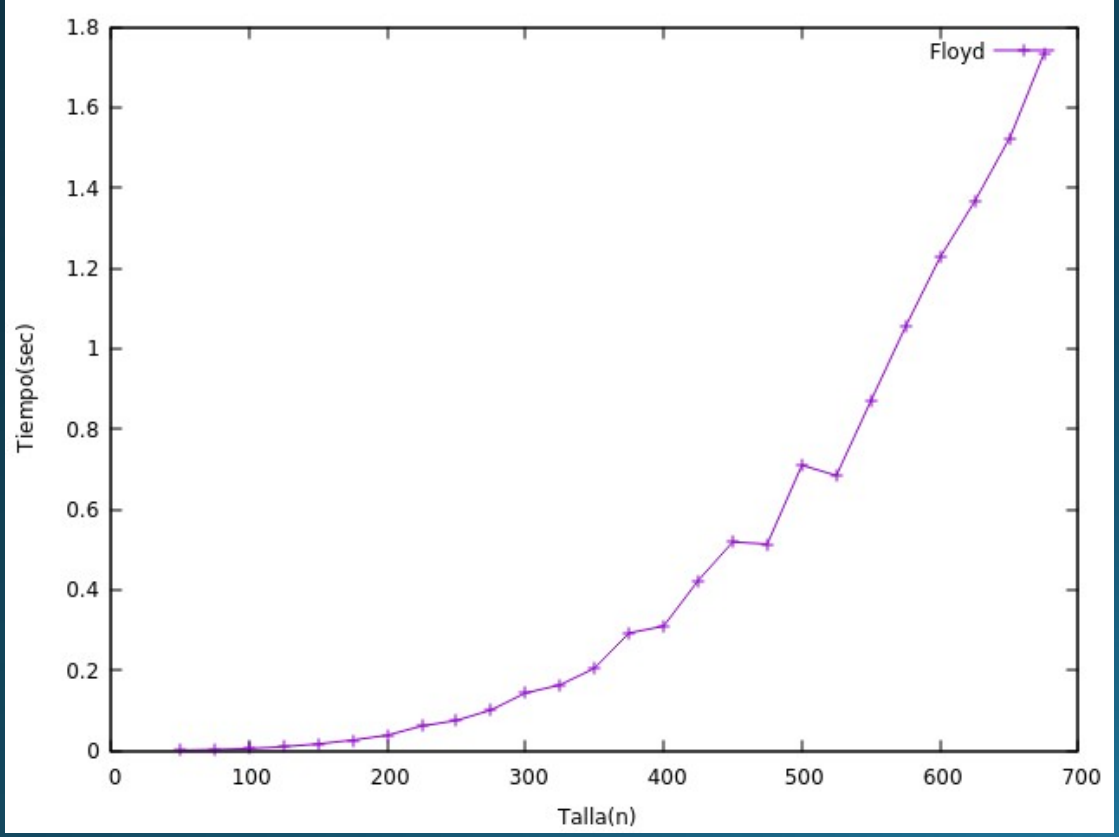


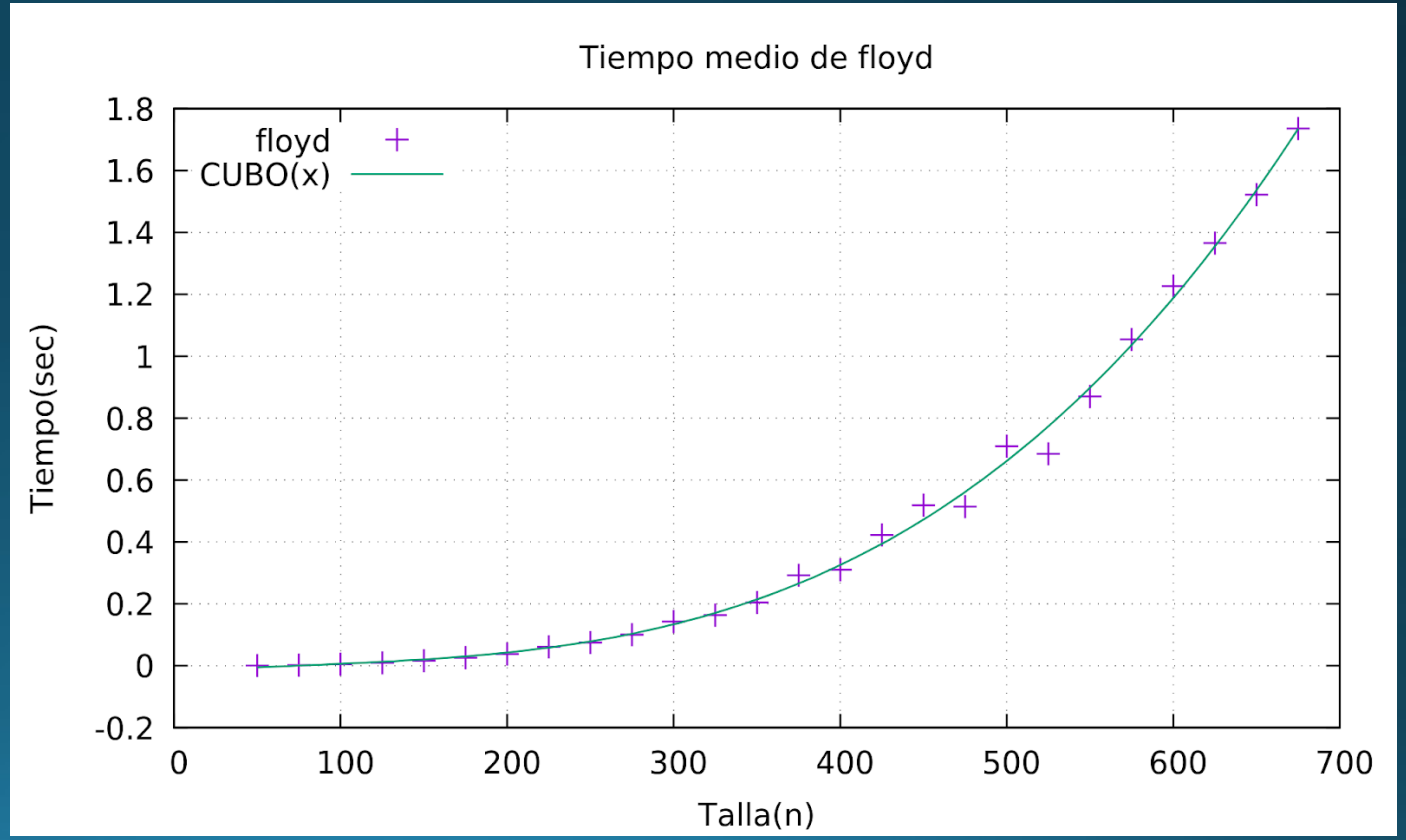



# 4. Floyd

El ajuste se realiza con

$T(n) = a*n^3 + b*n^2 + c*n + d$

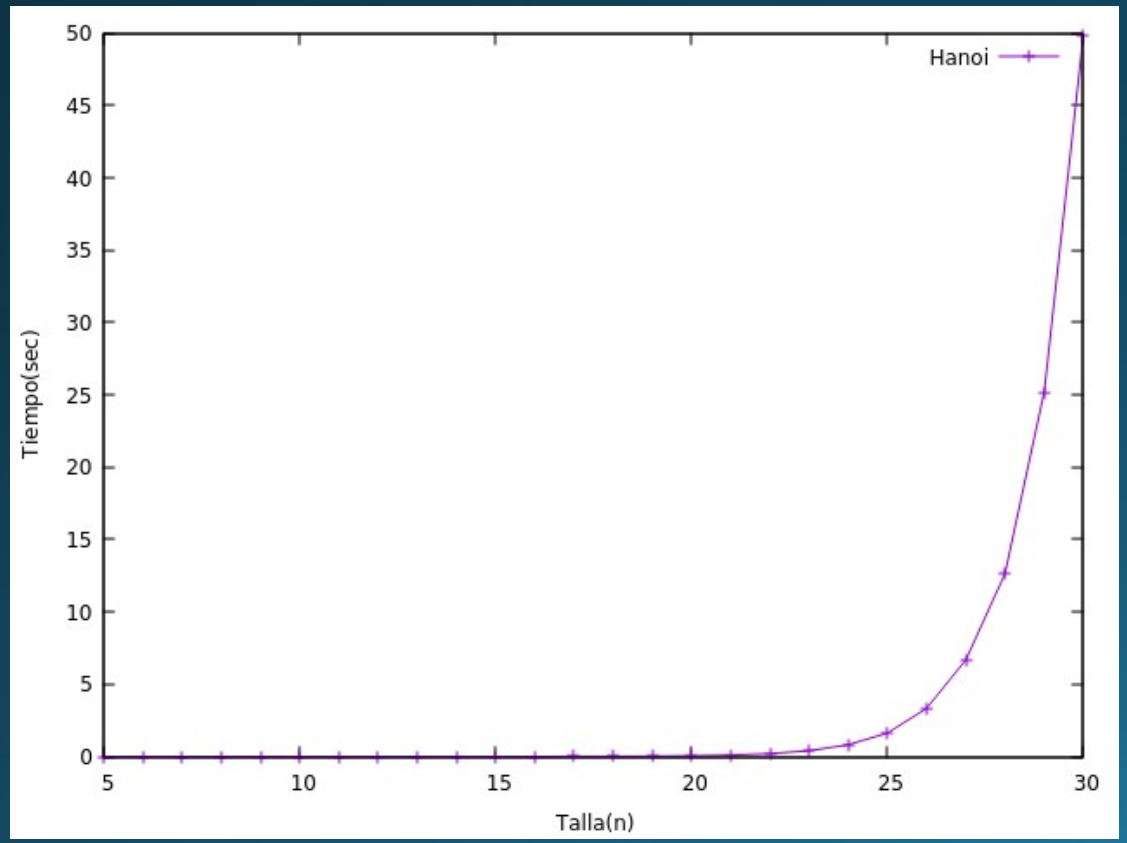


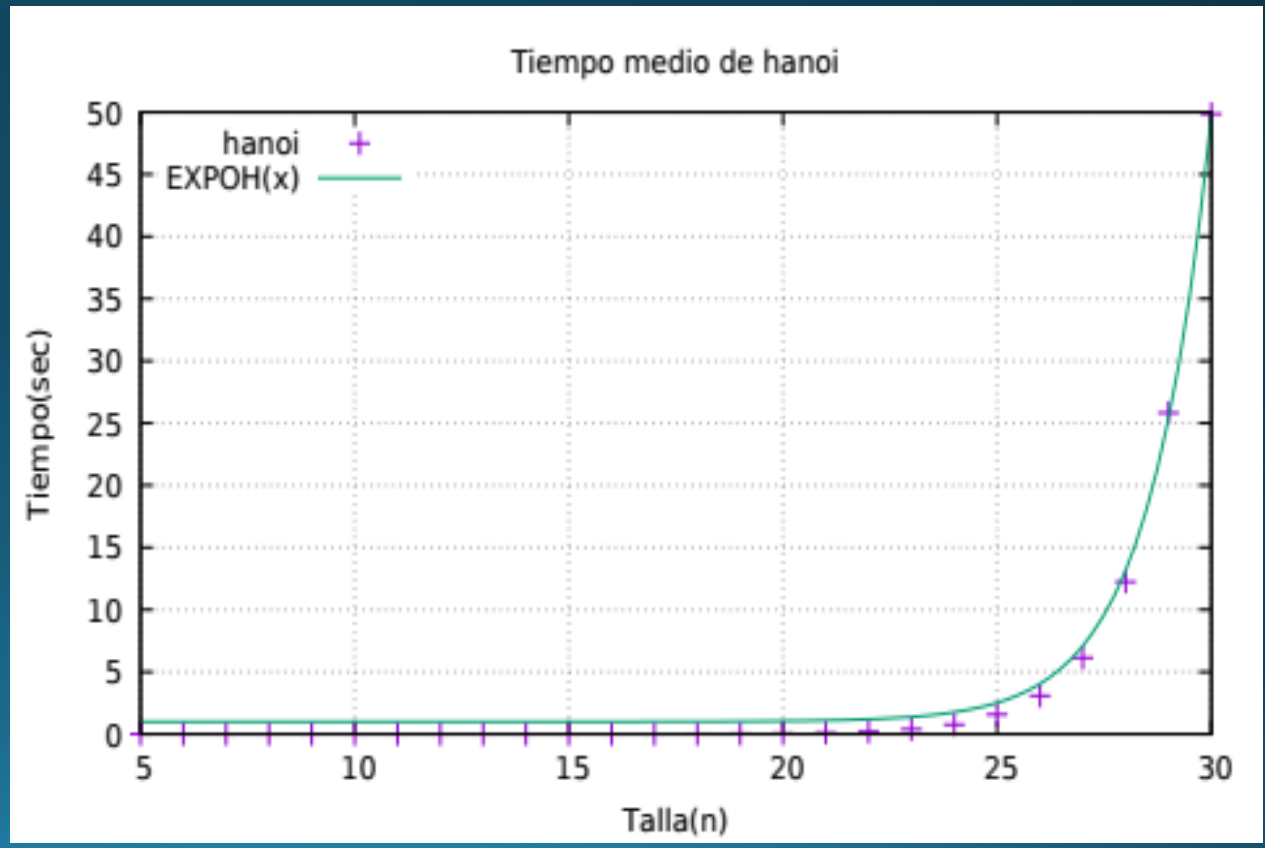



# 5. Hanoi

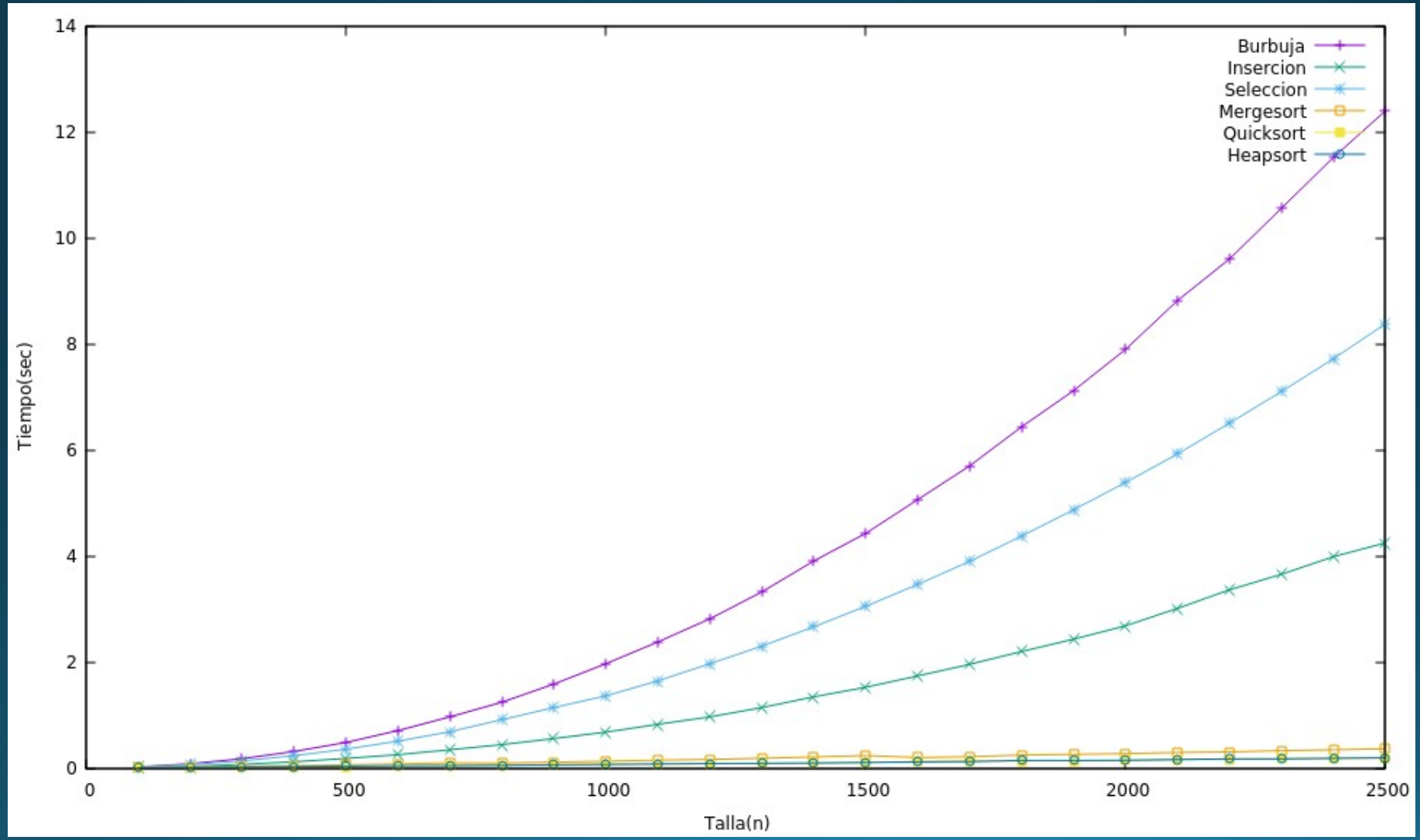
## El ajuste se realiza con

$T(n) = a * (2^n) + b$

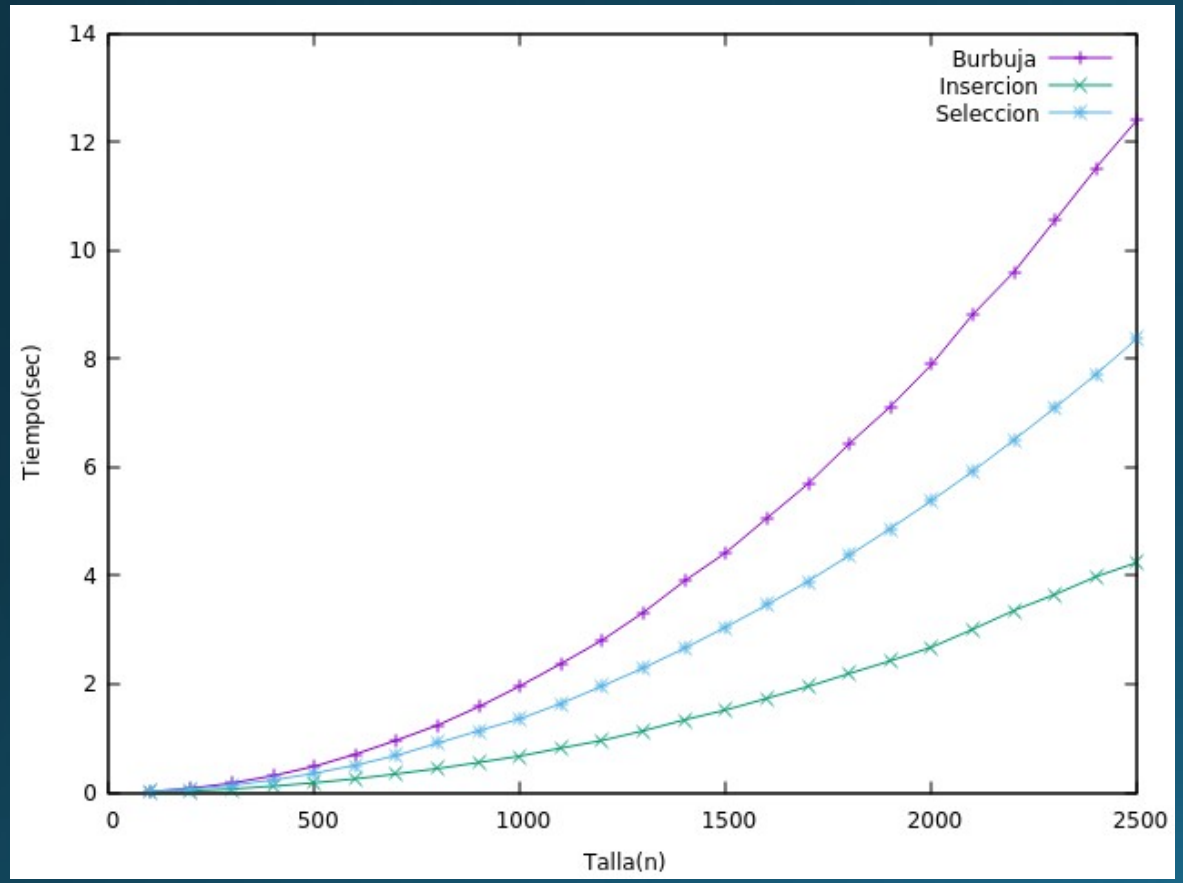


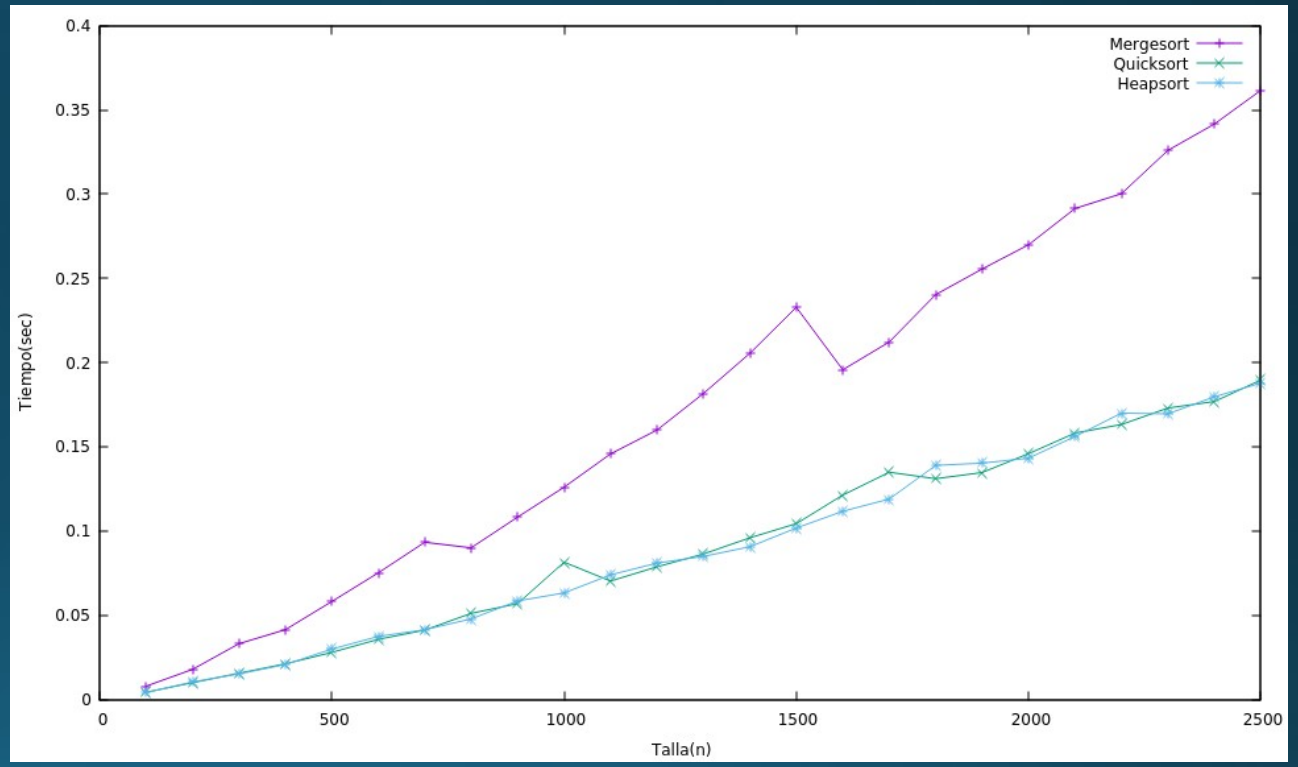



# 6. Comparativa

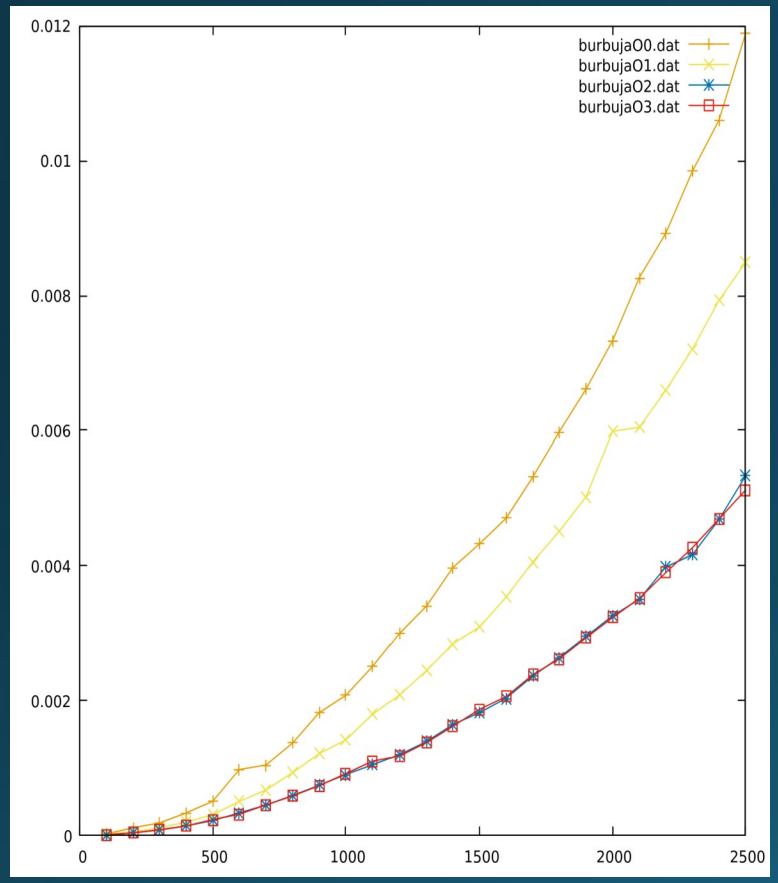


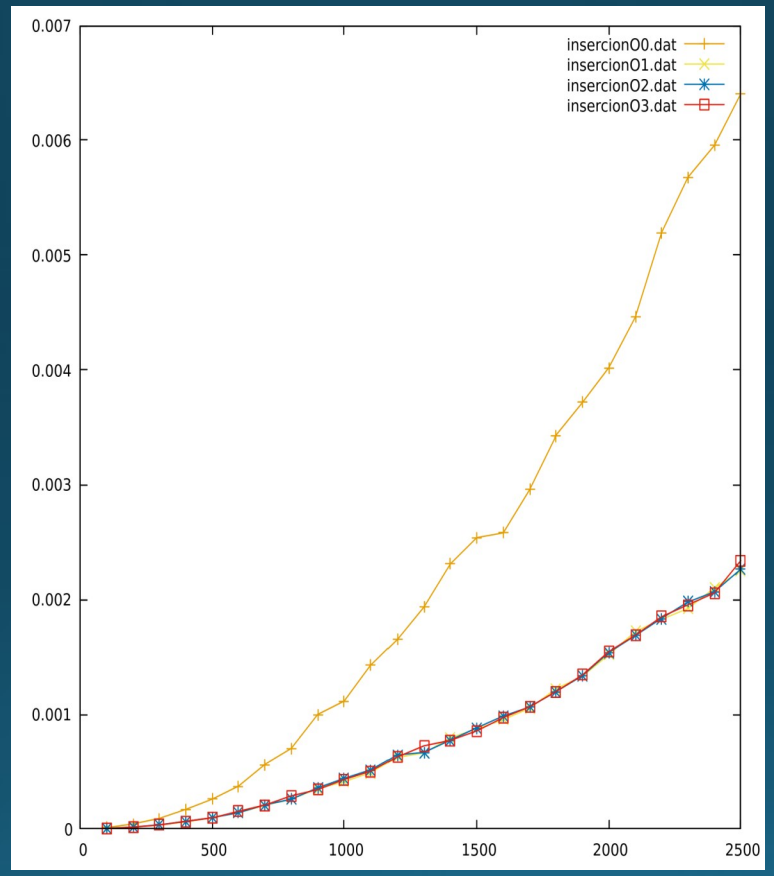
# 6. Comparativa

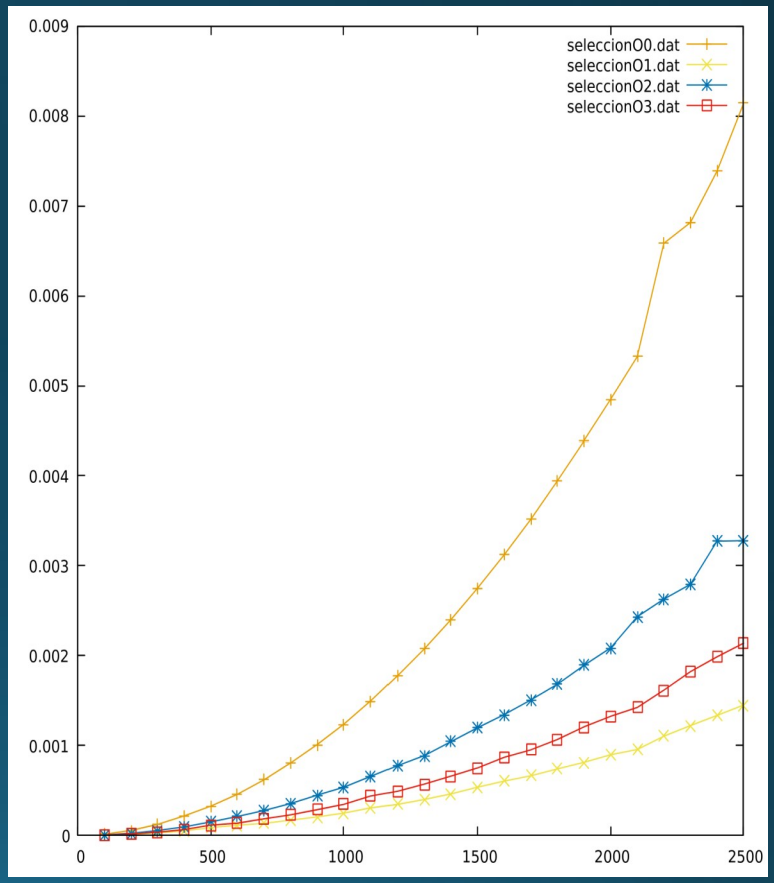


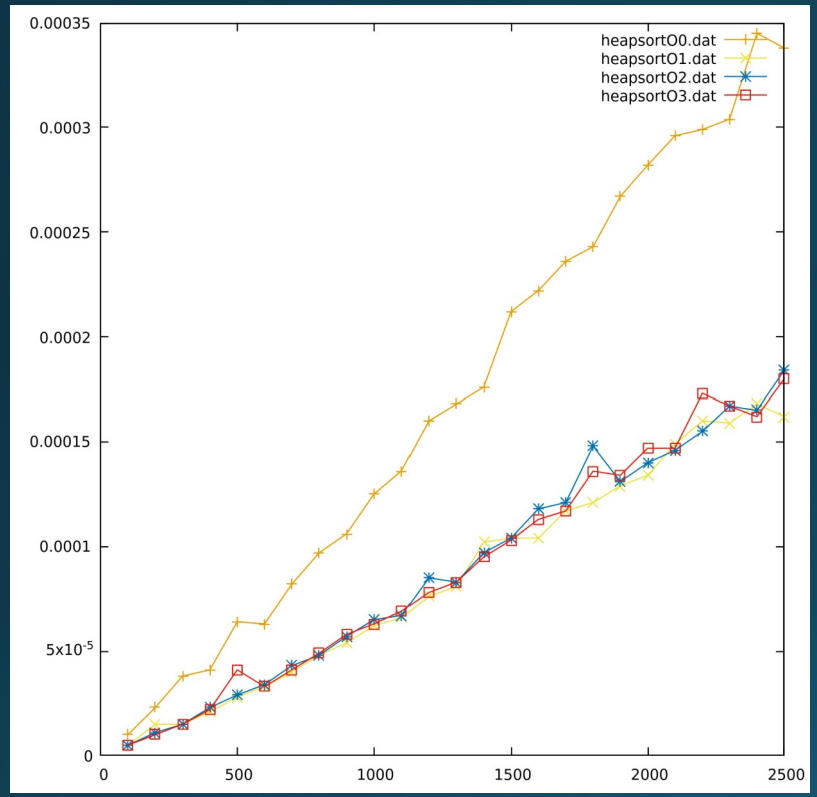
# 7. Optimización

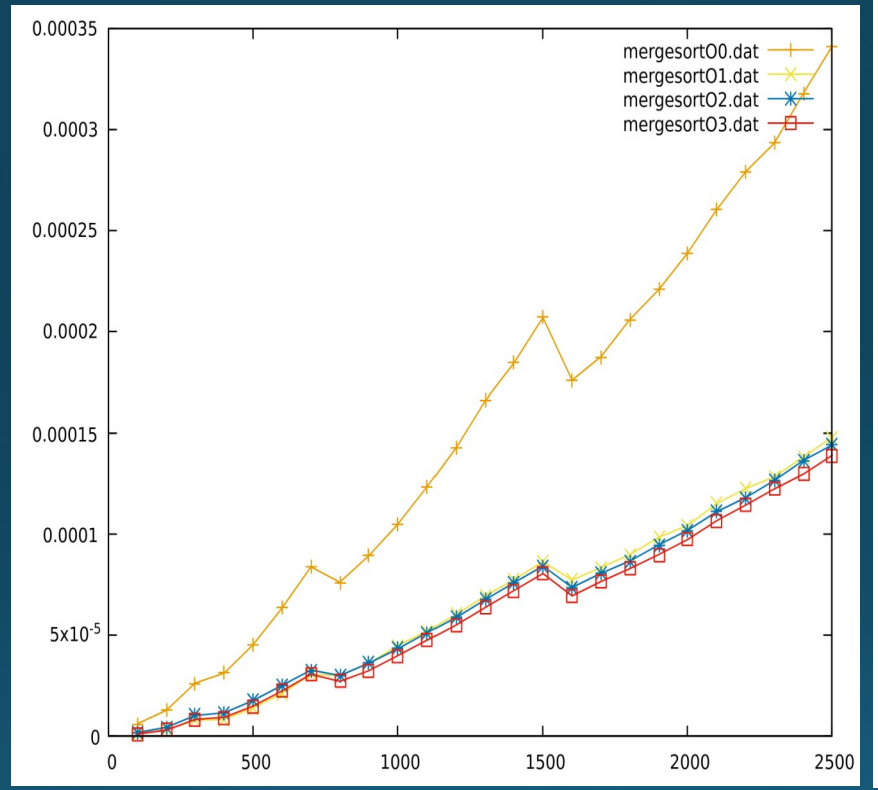


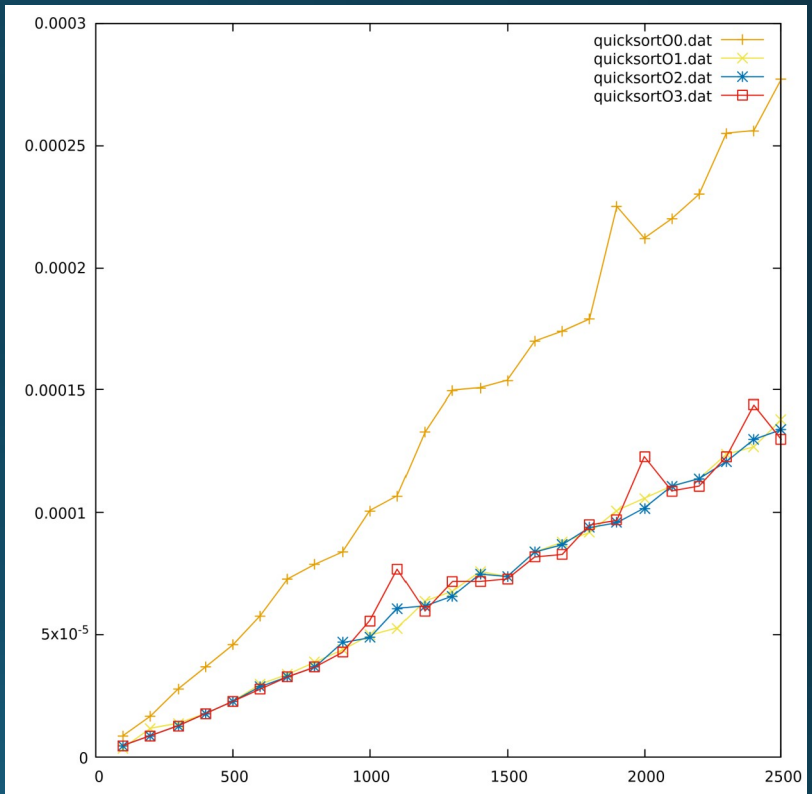



# 7. Optimización



# 7. Optimización