Name: _____ CS Login: _____ Worksheet #2

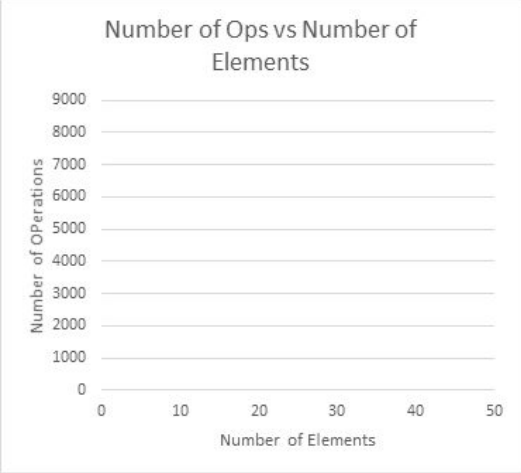
Please turn this in at the end of class (don't worry, we're not grading on correctness!). Make sure to write your login legibly. Sit with a partner or to work on these together though the lecture (or make friends with the people around you!) Check your answers with other neighbors.

Question 1:

How many operations are performed in the argmax function if the list has:

a. 10 elements?
b. 20 elements?
c. 30 elements?
d. 40 elements?
e. 100 elements?
f. 100,000 elements?

Plot the first four of these results on the chart to the right. Ponder the bigger one.

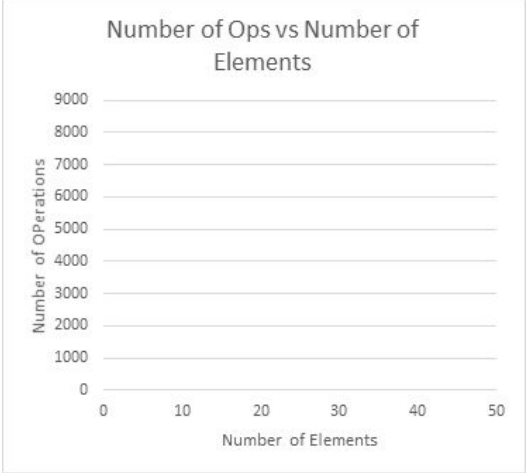


Question 2:

How many operations are performed in the possible_products function if the list has:

a. 10 elements?
b. 20 elements?
c. 30 elements?
d. 40 elements?
e. 100 elements?
f. 100,000 elements?

Plot the first four of these results on the chart to the right. Ponder the bigger one.



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Question 1:

How many operations are performed in this function if the list has:

a. 10 elements?
b. 20 elements?
c. 30 elements?
d. 40 elements?
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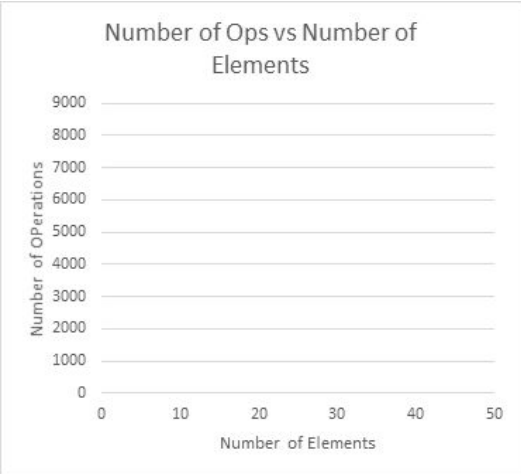
Plot the first four of these results on the chart to the right. Ponder the bigger one.



Question 2:

How many operations are performed in this function if the list has:

a. 10 elements?
b. 20 elements?
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d. 40 elements?
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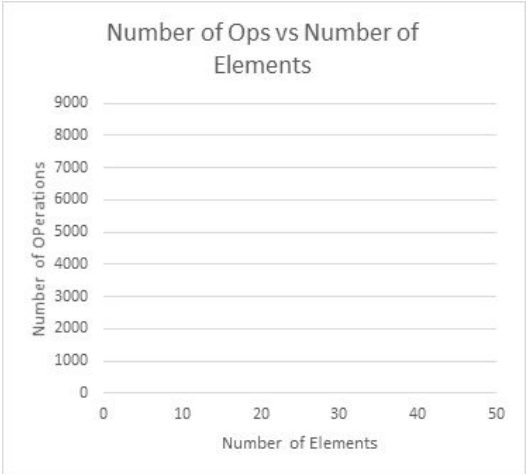
Plot the first four of these results on the chart to the right. Ponder the bigger one.



Question 3:

a. Does $n = O(n^2)$?
b. Does $n^2 = O(n^3)$?
c. Why or why not?

Question 4:

Fill out the Big-θ runtimes in this table:

Function, f(n)	Big-O	Another Big-O	Big-Ω	Big-θ
an+b	$O(n)$	$O(n^{100})$	$\Omega(n)$	
an^2+bn+c	$O(n^3)$	$O(n^2)$	$\Omega(n)$	
a	$O(n)$	$O(2^n)$	$\Omega(1)$	
3^n+an^{40}	$O(3^n)$	$O(50^n)$	$\Omega(n)$	
an+blog(n)	$O(n^2)$	O(nlog(n))	Ω(log(n))	

"aha!" / "oops" moments to share with the class:

Question 5:

To calculate:	Number of times fib() is called
fib(0)	1
fib(1)	1
fib(2)	3
fib(3)	
fib(4)	

Question 3:

d. Does $n = O(n^2)$?
e. Does $n^2 = O(n^3)$?
f. Why or why not?

Question 4:

Fill out the Big-θ runtimes in this table:

Function, f(n)	Big-O	Another Big-O	Big-Ω	Big-θ
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