Runtime Complexity

Describes the performance of an algorithm

How much more processing power/time is required to run your algorithm if we double the inputs?

String Reverse

abc → cba

 $abcdefghijklmnopqrstuvwx \cite{yz} \ensuremath{\blacktriangleright} yxwvutsrqponmlkjihgfedcba$

Each additional character = 1 step through 1 loop

This would be 'N', or 'linear' runtime.

Steps Algorithm

steps = 2

-

Had to do 4 things

steps = 3

- -# # -# #

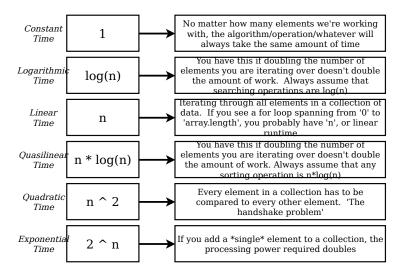
Had to do 9 things

steps = 4

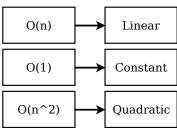
#	1	1	-
#	#	1	1
#	#	#	-
#	#	#	#

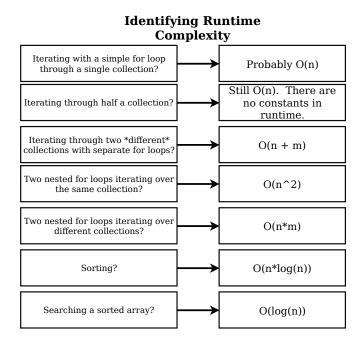
Had to do 16 things As 'n' increased by one, we had to do way, way more stuff, or (n*n) things total

This would be N^2, or quadratic runtime



Big 'O' Notation





Last note...

 $\begin{array}{c} \text{Space Complexity is a thing} \\ \text{too} \end{array}$

How much more memory is required by doubling the problem set?