\*\*Pain is a way to growth

**Big o** to describe the performance or complexity of an algorithm in cs and can be used to describe the execution time required or the space used by an algorithm.

O (1) fixed performance algorithm take same time or space regardless the size of input data

O(n) linearly performance grow with the size of data

O(n^2) proportional to the square of the size of data input

O(2^n) performance growth doubles with each addition of data input

O (log n) efficient when dealing with large data sets. Since its growth curve peaks at the beginning and slowly flattens out as the size of the data sets increase

\*\* Variable and how it saved in the memory /variable never copy data /mutable and immutable variable