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4026
Set I

Q1. Describe categories of data structure

=> 1) Linear Data structure

-> in a linear structure data element are arranged in a sequential or linear order, each element is connected to its previous and next adjacent element

* ex =>
array => A collections of fixed-size homogenous data element stored in contiguous memory location element are accessed through an index

2) Non linear Data structure =

-> In a non-linear data structure data elements are not arranged sequentially instead they are arranged in a hierarchical or network

* ex =>
A hierarchical struct where data element can have one or many relationships
ex subtype, Binary Tree

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Q2 Different top down and bottom up approach algorithms

TOP Down	Bottom up
Decomposition	composition
large problem -> small	small -> large problem
recursion + memo's	Iteration + tabulation
short due to recursion methods	results in tabular data
only high problems are solved	all subproblems are typically solved

Q3 describe complexity and its type

=> A) Time complexity
-> time complexity counts the number of elementary operations an algorithm executes given input size (n). It is a measure of efficiency in time of processing

eg
If an algorithm has time complexity its execution time

uorb

=> Space complexity

Space complexity quantifies the amount of memory an algorithm requires relative to the input size this involves

-> input space
-> auxiliary space

ex =>

an algorithm that use a fixed number of variable

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