

Q7 Describe characteristics of data structures

→ 1) Linear Data Structures

→ In a linear structure data elements are arranged in a sequence on line or linear order, each element is connected to its previous and next adjacent element.

* ex →

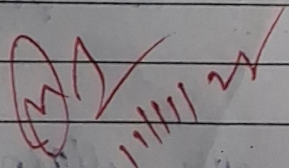
array → A collection of fixed-size homogeneous data elements stored in contiguous memory locations. Elements are accessed via an index.

2) Non Linear Data Structures →

→ In a non-linear data structure data elements are not linearly inserted. They are arranged in a hierarchical or network.

* ex →

A hierarchical structure where data elements are linked to many sub-elements. ex: subgraph, Binary tree



Q 2 Different loop design are better or up or down algorithms

TOP Down	Bottom up
Decomposition	Composition
Large problem \rightarrow small	small \rightarrow large problems
Recursion + memo	Iteration + subtable
Starts with recursive methods	Starts with iterative methods
only high problem are solved	all subproblems are typically solved

Q 3 Describe complexity and its type

> 1) Time complexity

\rightarrow Time complexity tells how much of time an algorithm takes to execute for a given input size (n) . It is a measure of efficiency in terms of processing.

eg

If an algorithm has time complexity $O(n^2)$ it means it will take n^2 time to execute for n input.

⇒ Space complexity

Space complexity quantifies the amount of memory an algorithm requires in terms of the input size ~~and~~ the number

→ Input space

→ Auxiliary space

etc ⇒

An algorithm that uses a fixed number of variables

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