



Data Structure

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Title: Introduction to Data Structures



What is a Data Structure?

- Definition: Data structures are ways to store and organize data so that we can use it efficiently.
- Importance: Helps in managing and organizing large amounts of data in a way that allows for efficient access, modification, and retrieval.

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Types of Data Structures



- Linear Data Structures: Data is arranged sequentially.
- Examples: Arrays, Linked Lists, Stacks, Queues
- Non-Linear Data Structures: Data is not arranged in sequence.
- Examples: Trees, Graphs, Hash Tables



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Basic Example For Data Structure



Arrays :

A list of items, where each item can be accessed using an index

Example - (like a row of boxes where each box has a number).

Linked Lists:

A chain of items where each item points to the next one

Example - (like a treasure hunt where each clue leads to the next).

Stacks:

A collection where you can only add or remove items from the top

Example - (like a stack of plates, where you add or remove plates from the top).

Queues:

A collection where items are added at the end and removed from the front

Example - (like a line at a coffee shop).

Trees:

A structure with a root and branches, where each branch can have more branches

Example - (like a family tree).

Hash Tables:

A way of storing data that allows fast access using a key

Example - (like a dictionary where each word has a definition).

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