PYTHON FOR COMPUTATIONAL PROBLEM SOLVING

Data Structures in Python

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- **A way of organizing and storing data** so that they can be accessed and worked with efficiently.

- **Becomes more significant with increase in the volume of data** to be stored and retrieved.

- Real life examples:

  – Organization of books in library

  – Organization of clothes

  – File system on a computer

Broad Classification of Data Structures

- **Generic Data Structures**
  - Can be used to develop any collections
  - No particular way to access elements
  - Example: List, tuple

- **Specific Data Structures – Collections**
  - There is a particular way in which an element can be accessed
  - Stack, Queue

Classification Based On Memory Usage

- **Sequence Type Data Structures**
  - Data stored in contiguous manner
  - Elements can be accessed through indexes/subscript notation
  - Enables random access of elements
  - Can store homogeneous or heterogeneous data

- **Non-Sequence Type Data Structures**
  - Data stored in non-contiguous manner
  - No direct indexing
  - No random access of elements
  - Typically stores homogeneous data

Common Operations on Sequence Type

- in, not in

- Index operator []

- Relational operators

- Slicing operator (:)

- len()

- max(), min()

- count()

- index()

Common Operations on Non-Sequence Type

- in, not in

- len()

- max(), min()

- Few of the relational operators

THANK YOU

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