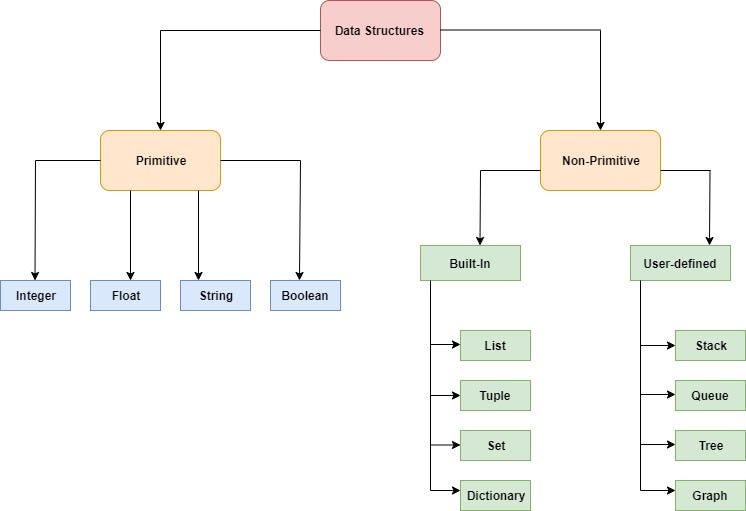
**Data Structures:**



* **List** is a collection which is ordered and changeable. It Allows duplicate values.
* **Tuple** is a collection which is ordered and unchangeable. It Allows duplicate values.
* **Set** is a collection which is unordered, unchangeable, and unindexed. Not allows duplicate values.
* **Dictionary** is a collection which is ordered and changeable. Not allows duplicate values.

**Lists, Tuples, Dictionaries, and Sets**

**1. List (Mutable Ordered Collection)**

**Definition**: A list is an ordered collection of elements that can contain duplicates. The elements in a list are indexed, meaning each element has a specific position.

**Ex**:

List1 = [1, 2, 3, ‘apple’, 5.6]

customers = [‘ganesh’, ‘sai’, ‘varun’, ‘manas’]

orders = [1001, 1002, 1003]

**2. Tuple (Immutable Ordered Collection)**

**Definition**: A tuple is a collection of items that is ordered and immutable (cannot be changed once created). Tuples are useful when you want a fixed set of values.

**Ex**:

Tuple1 = (1, 2, 3, ‘apple’, 5.6)

coordinates = (10,20)

**3. Dictionary (Key-Value Pairs)**

**Definition**: A dictionary is a collection of key-value pairs, where each key is unique and used to store a value.

**Ex**:

dict1 = {‘name’: vignan, ‘age’: 23, ‘city’: ‘Hyd’}

grades = {‘1001’: ‘A’, ‘1002’: ‘B’, ‘1003’: ‘C’}

**4. Set (Unordered Collection of Unique Elements)**

**Definition**: A set is an unordered collection of unique elements. Sets are useful when you need to store unique values.

**Ex**:

Set\_2 = {1, 2, 3, 4, 5}

numbers = [1, 2, 3, 4, 5, 5, 6]

unique\_numbers = set(numbers) # Removes duplicates.

print(unique\_numbers) # Output: {1, 2, 3, 4, 5, 6}

**Basic programs:**

**List operations:**

my\_list = [1, 2, 3, 4, 5]

print(my\_list[0])

print(my\_list[-1])

my\_list.append(6)

my\_list.insert(2, 2.5)

my\_list.remove(3)

popped\_item = my\_list.pop()

print(my\_list[1:4])

print(len(my\_list))

**Tuple operations:**

my\_tuple = (1, 2, 3, 4)

print(my\_tuple[0])

print(my\_tuple[-1])

**Dict operations:**

dict1 = {‘name’: vignan, ‘age’: 23, ‘city’: ‘Hyd’}

print(my\_dict["name"])

my\_dict["age"] = 26

my\_dict["city"] = "pune"

del my\_dict["city"]

removed\_value = my\_dict.pop("age")

**set operations:**

my\_set1= {1, 2, 3, 4}

my\_set2 = {3, 4, 5, 6}

union\_set = my\_set1 | my\_set2

intersection\_set = my\_set1 & my\_set2

difference\_set = my\_set1 - my\_set2