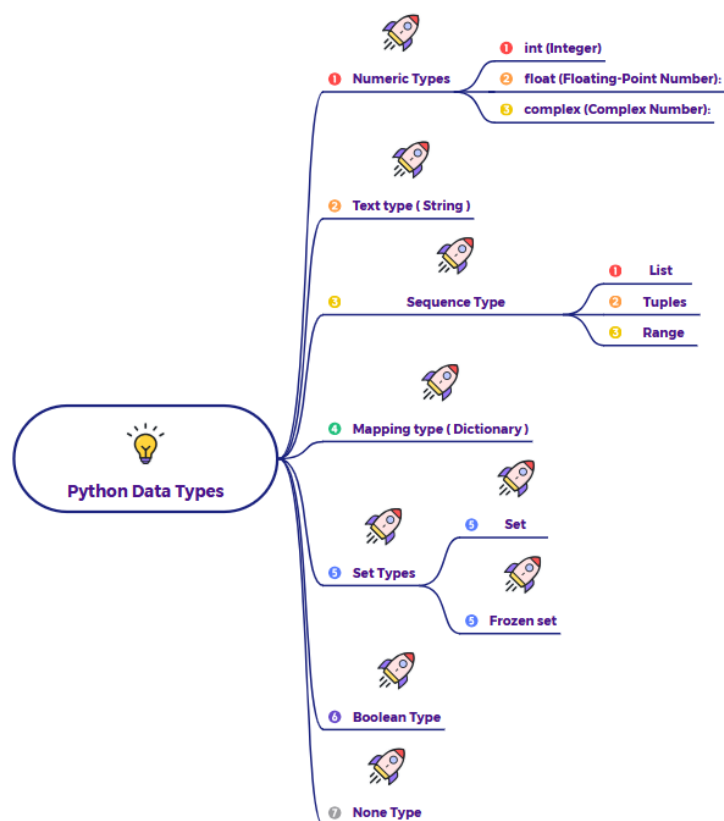


Different types of data types in python

In Python, every piece of data has a specific **data type**. Knowing data types is crucial because they determine what kind of operations you can perform on a value and how it's stored in memory.

Here are the main types of data you'll encounter in Python, categorized for clarity:



1. Numeric Types

These are used to store numbers.

- **int (Integer):**
 - **What it is:** Whole numbers, positive or negative, without a decimal point.
- **float (Floating-Point Number):**
 - **What it is:** Numbers with a decimal point, representing real numbers.

- **complex (Complex Number):**
 - **What it is:** Numbers with a real and an imaginary part (e.g., $a + bj$, where j is the imaginary unit). Less common in general programming, but used in scientific and engineering applications.

2. Text Type

- **str (String):**
 - **What it is:** A sequence of characters (letters, numbers, symbols). Strings are **immutable**, meaning once created, their content cannot be changed.

3. Sequence Types

These are ordered collections of items.

- **list:**
 - **What it is:** An ordered, changeable (mutable) collection of items. You can add, remove, or modify items after the list is created. Enclosed in square brackets `[]`.
- **tuple:**
 - **What it is:** An ordered, unchangeable (immutable) collection of items. Once a tuple is created, you cannot modify its elements. Enclosed in parentheses `()`.
- **range:**
 - **What it is:** Represents an immutable sequence of numbers, often used for looping a specific number of times. It's memory-efficient because it generates numbers on demand, rather than storing them all.

4. Mapping Type

- **dict (Dictionary):**

- **What it is:** An unordered, changeable collection of data in "key-value" pairs. Each key must be unique, and it maps to a corresponding value. Enclosed in curly braces {}.

5. Set Types

These are unordered collections of unique items.

- **set:**
 - **What it is:** An unordered, unindexed, changeable collection that does **not allow duplicate members**. Useful for mathematical set operations (union, intersection). Enclosed in curly braces {}.
- **frozenset:**
 - **What it is:** An immutable version of a set. Once created, you cannot add or remove items.

6. Boolean Type

- **bool (Boolean):**
 - **What it is:** Represents one of two values: True or False. Used for logical operations and conditional statements.

7. None Type

- **NoneType (None):**
 - **What it is:** A special data type that represents the absence of a value or a null value. It's often used to initialize variables that will later hold a value, or as a default return from a function that doesn't explicitly return anything.

Understanding these different data types is fundamental to writing effective and efficient Python code!