**Simple Data Types in Python: Numbers and Strings**

Python has several built-in data types, but two of the most fundamental ones are **Numbers** and **Strings**.

**1. Numbers**

Numbers in Python are used to store numeric values. Python supports different types of numbers, including:

**a) Integer (int)**

* Whole numbers (positive, negative, or zero).
* No decimal point.
* Example:
* x = 10
* y = -5
* print(type(x)) # Output: <class 'int'>

**b) Floating-point (float)**

* Numbers with decimal points.
* Used for representing real numbers.
* Example:
* a = 3.14
* b = -2.5
* print(type(a)) # Output: <class 'float'>

**c) Complex (complex)**

* Used for complex numbers with a real and imaginary part.
* Represented as a + bj, where j is the imaginary unit.
* Example:
* z = 2 + 3j
* print(type(z)) # Output: <class 'complex'>

**Basic Operations with Numbers**

Python allows mathematical operations on numbers:

a = 10

b = 3

print(a + b) # Addition: 13

print(a - b) # Subtraction: 7

print(a \* b) # Multiplication: 30

print(a / b) # Division: 3.333...

print(a // b) # Floor Division: 3

print(a % b) # Modulus (remainder): 1

print(a \*\* b) # Exponentiation: 10^3 = 1000

**2. Strings (str)**

A **string** is a sequence of characters enclosed in **single ('), double (")**, or **triple (''' or """```)** quotes.

**Creating Strings**

s1 = 'Hello'

s2 = "Python"

s3 = '''This is a

multi-line string'''

print(type(s1)) # Output: <class 'str'>

**String Operations**

* **Concatenation (+)**: Joining two strings
* first = "Hello"
* second = "World"
* result = first + " " + second
* print(result) # Output: Hello World
* **Repetition (\*)**: Repeating a string multiple times
* print("Python " \* 3) # Output: Python Python Python
* **Indexing**: Accessing characters using their position (index starts at 0)
* word = "Python"
* print(word[0]) # Output: P
* print(word[-1]) # Output: n (last character)
* **Slicing ([:])**: Extracting parts of a string
* text = "Programming"
* print(text[0:4]) # Output: Prog
* print(text[:6]) # Output: Progra
* print(text[4:]) # Output: ramming
* **String Length (len())**
* name = "ChatGPT"
* print(len(name)) # Output: 7

**String Methods**

Python provides built-in methods for string manipulation:

text = "hello python"

print(text.upper()) # HELLO PYTHON

print(text.lower()) # hello python

print(text.title()) # Hello Python

print(text.replace("python", "world")) # hello world

print(text.split()) # ['hello', 'python']

print(text.strip()) # Removes spaces from start and end

**Conclusion**

* **Numbers** in Python include **integers (int)**, **floating-point (float)**, and **complex (complex)** numbers.
* **Strings** represent sequences of characters and support **indexing, slicing, concatenation, repetition**, and various **built-in methods** for manipulation.