

Module : Mo4

# Python Basic Data Types



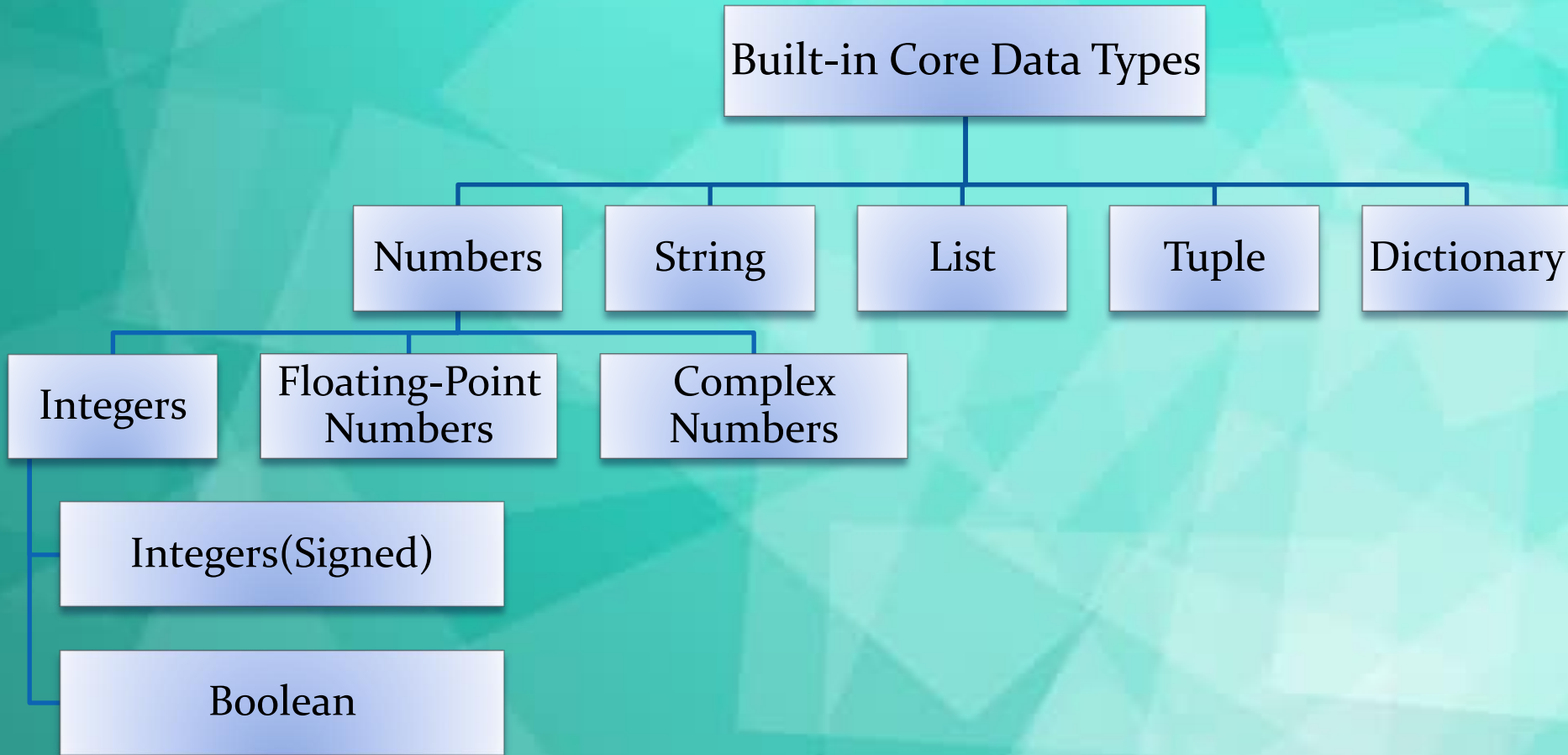
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# Python Built-in Core Data Types

Python offers following built-in core data types :

i) Numbers    ii) String    iii) List    iv) Tuple    v) Dictionary



# Integers

Integers are whole numbers. They have no fractional parts.

Integers can be positive or negative.

There are two types of integers in Python:

- i) Integers(Signed) : It is the normal integer representation of whole numbers using the digits 0 to 9. Python provides single int data type to store any integer whether big or small. It is signed representation i.e. it can be positive or negative.
- ii) Boolean : These represent the truth values True and False. It is a subtype of integers and Boolean values True and False corresponds to values 1 and 0 respectively

## Demonstration of Integer Data Type

```
#Demonstration of Integer-Addition of two integer number  
a=int(input("Enter the value of a:"))  
b=int(input("Enter the value of b:"))  
sum=a+b  
print("The sum of two integers=",sum)
```

### Output:

Enter the value of a: 45

Enter the value of b: 67

The sum of two integers= 112

# Floating Point Numbers

A number having fractional part is a floating point number.

It has a decimal point. It is written in two forms :

- i) Fractional Form : Normal decimal notation e.g. 675.456
- ii) Exponent Notation: It has mantissa and exponent.

e.g. 6.75456E2

Advantage of Floating point numbers:

- 🐍 They can represent values between the integers.
- 🐍 They can represent a much greater range of values.

Disadvantage of Floating point numbers:

- 🐍 Floating-point operations are usually slower than integer operations.

## Demonstration of Floating Point Data Type

```
#Demonstration of Float Number- Calculate Simple Interest
princ=float(input("Enter the Principal Amount:"))
rate=float(input("Enter the Rate of interest:"))
time=float(input("Enter the Time period:"))
si=(princ*rate*time)/100
print("The Simple Interest=",si)
```

### Output:

Enter the Principal Amount:5000

Enter the Rate of interest:8.5

Enter the Time period:5.5

Simple Interest= 2337.5

# Complex Number

Python represents complex numbers in the form  $a+bj$ .

#Demonstration of Complex Number- Sum of two Complex Numbers

```
a=7+8j
```

```
b=3.1+6j
```

```
c=a+b
```

```
print("Sum of two Complex Numbers")
```

```
print(a,"+",b,"=",c)
```

**Output:**

$(7+8j) + (3.1+6j) = (10.1+14j)$

# Strings

A String is a group of valid characters enclosed in Single or Double quotation marks. A string can group any type of known characters i.e. letters ,numbers and special characters.

A Python string is a sequence of characters and each character can be accessed by its index either by forward indexing or by backward indexing.

e.g. subj="Computer"





## Demonstration of String Data Type

```
#Demonstration of String- To input string & print it
my_name=input("What is your Name? :")
print("Greetings!!!")
print("Hello!",my_name)
print("How do you do?")
```

Output :

What is your Name? :Ananya Inkane

Greetings!!!

Hello! Ananya Inkane

How do you do?

# List

The List is Python's compound data type. A List in Python represents a list of comma separated values of any data type between square brackets. Lists are Mutable.

**#Demonstration of List- Program to input 2 list & join it**

```
List1=eval(input("Enter Elements for List 1:"))
```

```
List2=eval(input("Enter Elements for List 2:"))
```

```
List=List1+List2
```

```
print("List 1 :",List1)
```

```
print("List 2 :",List2)
```

```
print("Joined List :",List)
```

**Output:**

```
Enter Elements for List 1:[12,78,45,30]
```

```
Enter Elements for List 2:[80,50,56,77,95]
```

```
List 1 : [12, 78, 45, 30]
```

```
List 2 : [80, 50, 56, 77, 95]
```

```
Joined List : [12, 78, 45, 30, 80, 50, 56, 77, 95]
```

# Tuple

The Tuple is Python's compound data type. A Tuple in Python represents a list of comma separated values of any data type Within parentheses. Tuples are Immutable.

**#Demonstration of Tuple- Program to input 2 tuple & join it**

```
tuple1=eval(input("Enter Elements for Tuple 1:"))
```

```
tuple2=eval(input("Enter Elements for Tuple 2:"))
```

```
Tuple=tuple1+tuple2
```

```
print("Tuple 1 :",tuple1)
```

```
print("Tuple 2 :",tuple2)
```

```
print("Joined Tuple :",Tuple)
```

**Output:**

```
Enter Elements for Tuple 1:(12,78,45,30)
```

```
Enter Elements for Tuple 2:(80,50,56,77,95)
```

```
List 1 : (12, 78, 45, 30)
```

```
List 2 : (80, 50, 56, 77, 95)
```

```
Joined List : (12, 78, 45, 30, 80, 50, 56, 77, 95)
```

# Dictionary

Dictionaries are unordered collection of elements in curly braces in the form of a key:value pairs that associate keys to values. Dictionaries are Mutable. As dictionary elements does not have index value ,the elements are accessed through the keys defined in key:value pairs.

#Demonstration of Dictionary- Program to save Phone nos. in dictionary & print it

```
Phonedict={"Madhav":9876567843,"Dilpreet":7650983457,"Murugan":9067208769,"Abhinav":9870987067}
print(Phonedict)
```

Output:

```
{'Madhav': 9876567843, 'Dilpreet': 7650983457, 'Murugan': 9067208769, 'Abhinav': 9870987067}
```

# Thank you !

References: 1)Computer Science with Python By Sumita Arora  
2)<https://www.tutorialsteacher.com/python/statistics-module>  
3)CBSE Revised Syllabus