Module : M04

Python Basic Data Types

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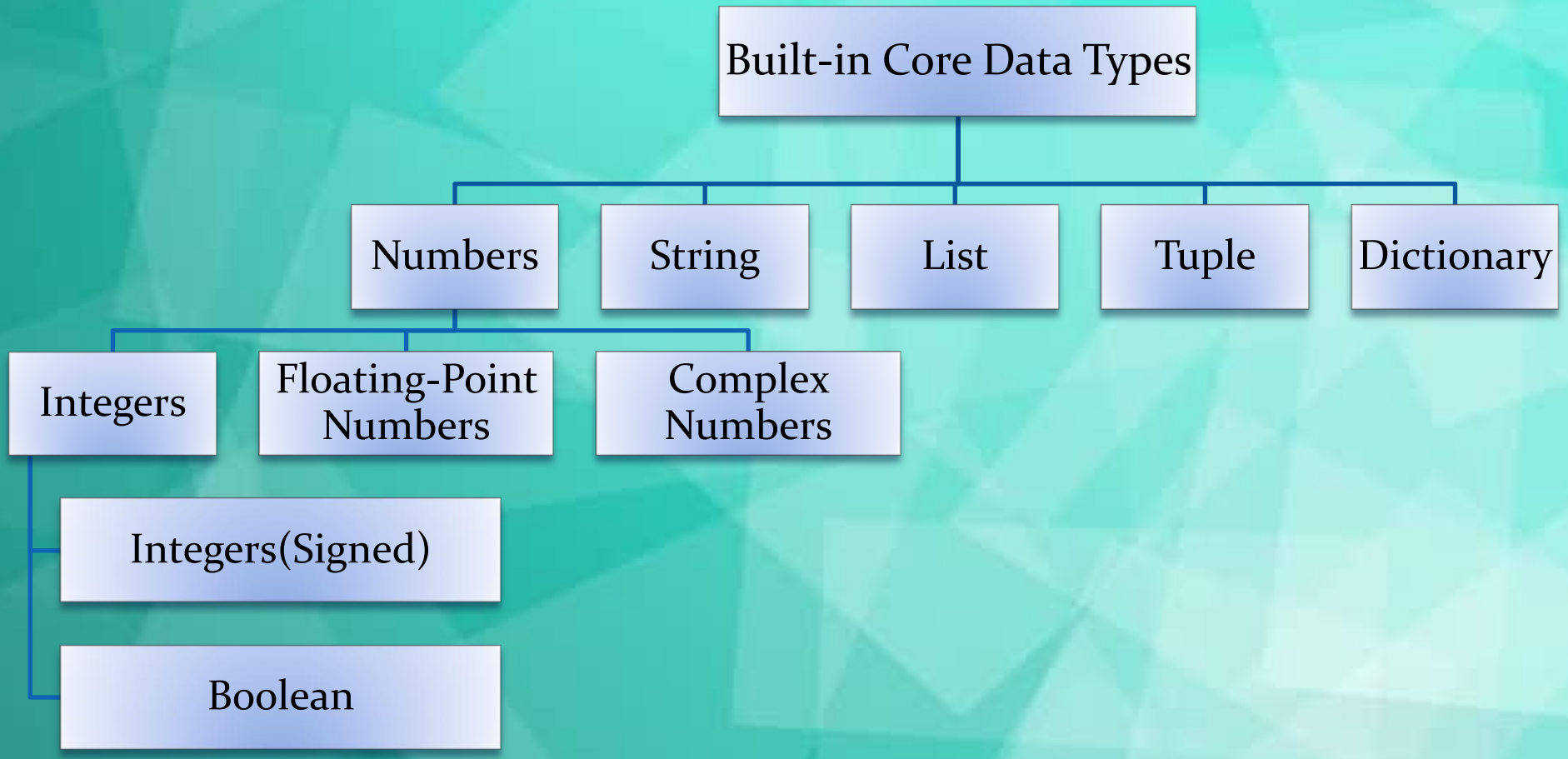
Code Explorer

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:

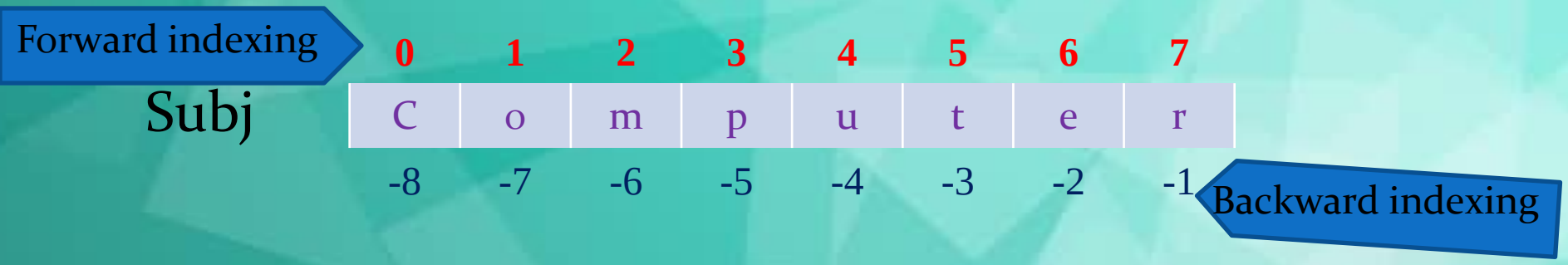
```
(7+8j) + (3.1+6j) = (10.1+14j)
```

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? : Pabitra Banerjee
Greetings!!!
Hello! Pabitra Banerjee
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