Data Types

Session Objectives

- Data Types
  - Concept
  - Example
  - Number System
- Types of Conversions
  - Implicit
  - Explicit
- Summary

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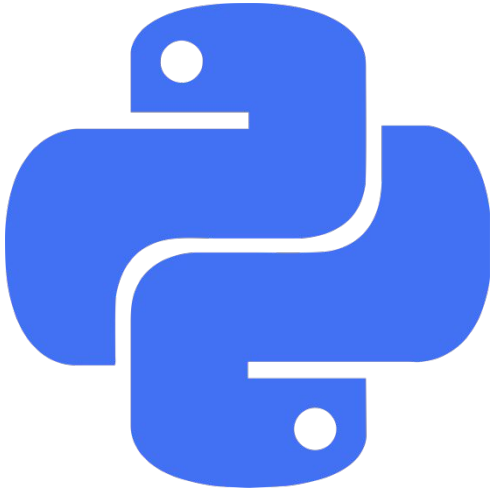
DATA TYPES IN PYTHON-1

- Basic Types
  - **None**
  - **Numeric Type**
    - Integer
    - Long
    - Float
    - Complex
  - **Boolean Type**
    - Function
    - Class
    - Objects
    - instance



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DATA TYPES IN PYTHON-2

- Container Types
  - String
  - List
  - Tuple
  - Dictionary
  - Set

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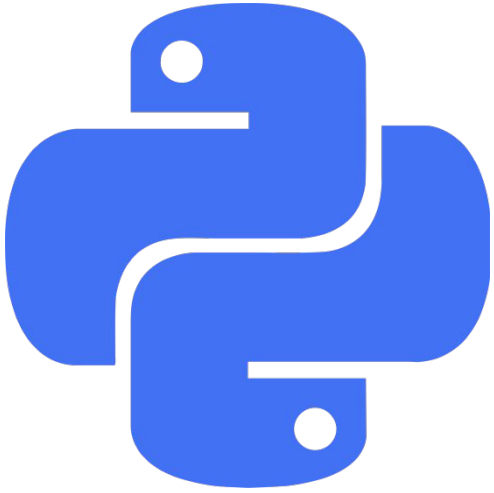

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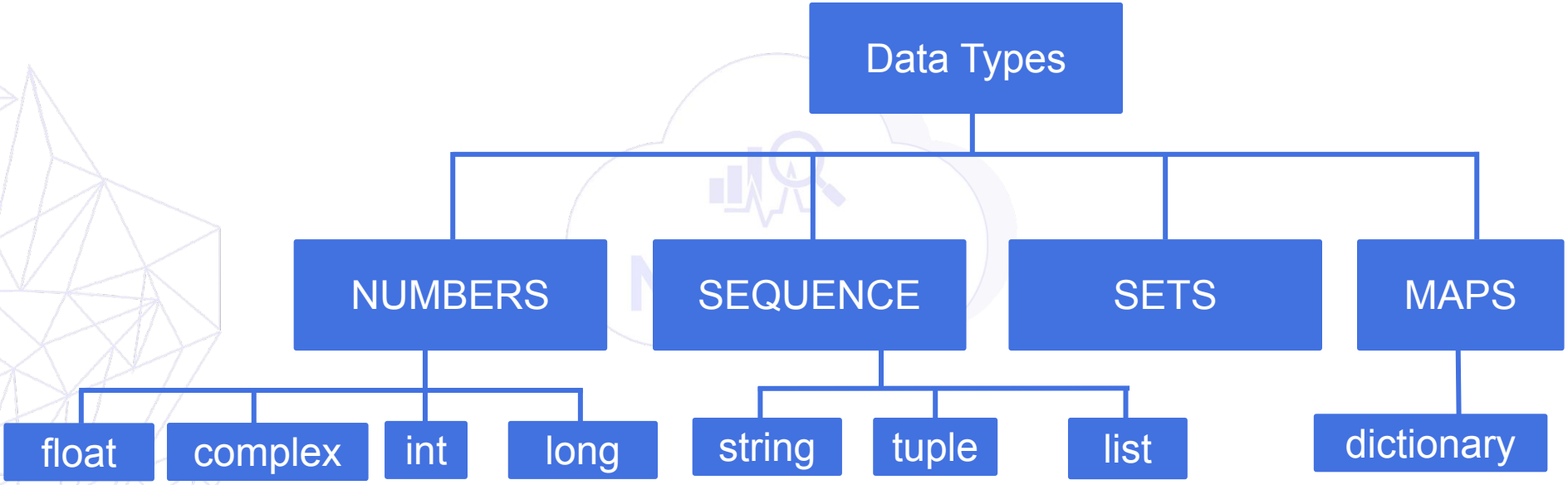

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Data Types Examples

```
a = 5
# Output: <class 'int'>
print(type(a))

# Output: <class 'float'>
print(type(5.0))

# Output: (8+3j)
c = 5 + 3j
print(c + 3)

# Output: True
print(isinstance(c, complex))
```

Type	Format	Description
int	a = 10	Signed Integer
long	a = 345L	(L) Long integers, they can also be represented in octal & hex.
float/double	a = 45.67	(.) Floating point real values
complex	a = 3.14J	(J) Contains integer in the range 0 to 255.


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Number System

There are 4 Number System in Python:

Base	Prefix	Interpretation
2	0b (zero + lowercase letter 'b') 0B (zero + uppercase letter 'B')	Binary
8	0o (zero + lowercase letter 'o') 0O (zero + uppercase letter 'O')	Octal
16	0x (zero + lowercase letter 'x') 0X (zero + uppercase letter 'X')	Hexadecimal

Example :-

```
>>>print(0O10)
8
>>> print(0x10)
16
>>> print(0b10)
2
```

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Types of Conversions

- Python has two types of conversions
  - Implicit(Automatically)
    - Python automatically converts one data type to another data type.
    - Python promotes conversion of lower data type. (integer) to higher data type (float) to avoid data loss
  - Explicit(Manually)
    - Syntax (required_datatype)(expression)

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Implicit(Auto)

- Python automatically converts one data type to another data type.
- doesn't need any user involvement.

```
>>> a = 5
>>> print(a, "is of type", type(a))
(5, 'is of type', <type 'int'>)
>>> a = 2.0
>>> print(a, "is of type", type(a))
(2.0, 'is of type', <type 'float'>)
>>> a = 1+2j
>>> print(a, "is complex number?", isinstance(1+2j,complex))
((1+2j), 'is complex number?', True)
>>>
```

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Explicit (Manual)

- float(5)
  5.0
- int(10.6)
  10
- int(-10.6)
  -10
- float('2.5')
  2.5
- str(25)
  '25'

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Summary

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???

The Important thing is not to stop

Questioning

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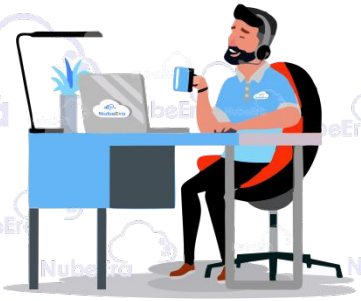

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