Raj Cloud Technologies
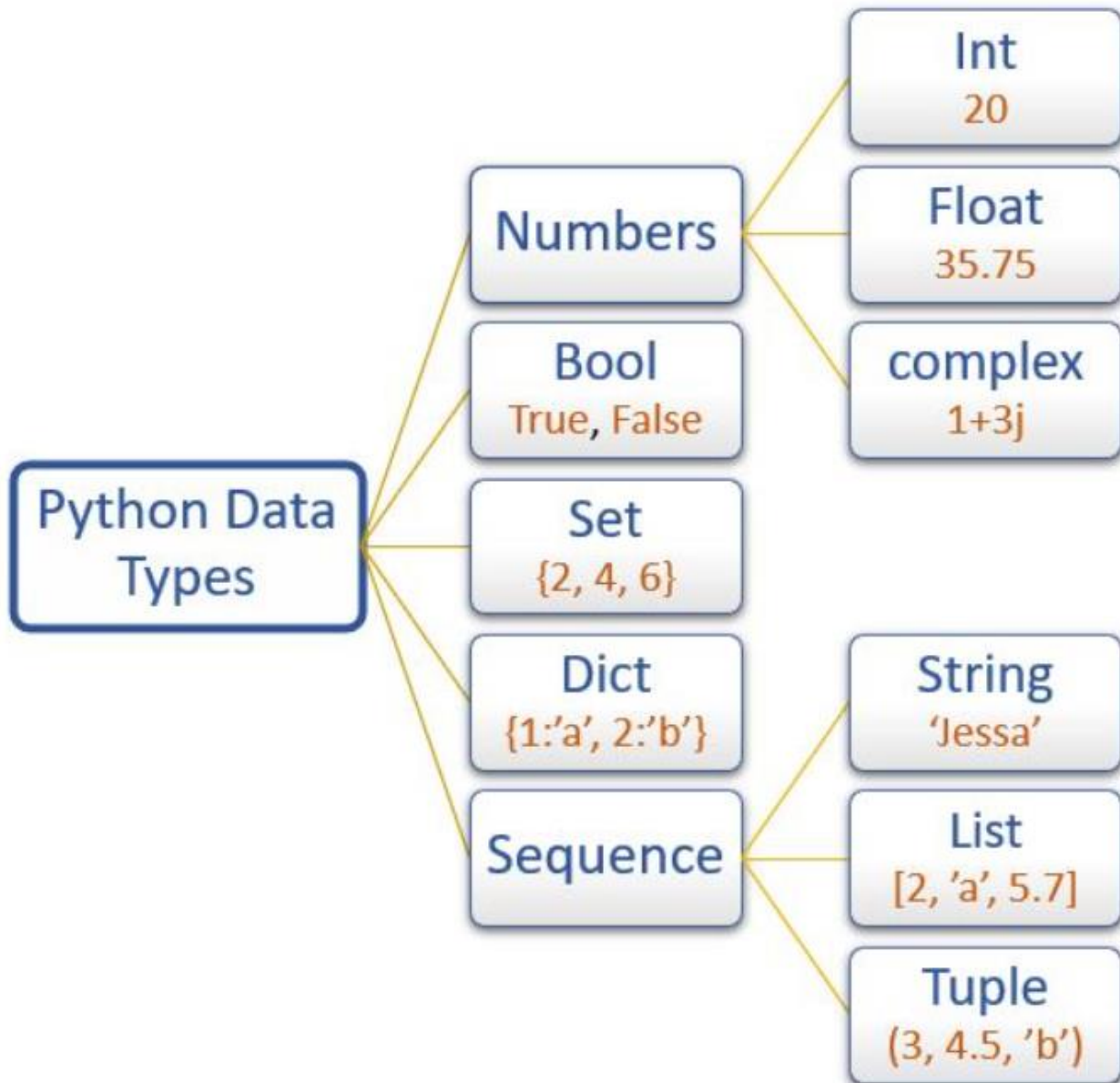## Online Job-Based Software Training Institute

Python Training Program

Data Types

Datatypes

Python Data types are the classification of values or data items. Data types are classes and variables are instances/objects of these classes

```
                                                    ┌─────────────┐
                                                    │    Int      │
                                                    │     20      │
                                                    └─────────────┘
                              ┌─────────────┐       ┌─────────────┐
                              │   Numbers   │───────│   Float     │
                              │             │       │   35.75     │
                              └─────────────┘       └─────────────┘
                              ┌─────────────┐       ┌─────────────┐
                              │    Bool     │       │  complex    │
                              │ True, False │       │    1+3j     │
                              └─────────────┘       └─────────────┘
  ┌──────────────┐           ┌─────────────┐
  │ Python Data  │           │    Set      │
  │    Types     │           │  {2, 4, 6}  │
  └──────────────┘           └─────────────┘
                              ┌─────────────┐       ┌─────────────┐
                              │    Dict     │       │   String    │
                              │{1:'a', 2:'b'}│      │   'Jessa'   │
                              └─────────────┘       └─────────────┘
                              ┌─────────────┐       ┌─────────────┐
                              │  Sequence   │       │    List     │
                              │             │       │ [2, 'a', 5.7]│
                              └─────────────┘       └─────────────┘
                                                    ┌─────────────┐
                                                    │   Tuple     │
                                                    │ (3, 4.5, 'b')│
                                                    └─────────────┘
```

Built-in data types

int   **float**   **complex**   **bool**   **string**   **list**

tuple   **dict**   **set**   **frozenset**   **bytes**   **bytearray**

etc...

Numeric Data Types

A numeric data type is a value can be an integer, a floating number, or even a complex number

Integer – This is positive or negative whole numbers (without decimals). In Python, there is no limit to how long an integer value can be.

Example:
x = 10
y = 10000
z = 12345678

Float – This is a real number with a floating-point/ decimal point representation. It is specified by a decimal point. Optionally, the character e or E followed by a positive or negative integer may be appended to specify scientific notation.

Example:
x = 10.5
y = 10000.12345
z = 12345678e+01

Complex Number – A complex number is represented by a complex class. It is specified as *(real part) + (imaginary part)j*.

Example:
x = complex()
y = complex(4)
z = complex(4,7)

➔ Lets Practice

Sequence Data Type

The sequence Data Type in Python is the ordered collection of similar or different Python data types

accessing sequence data items

- ✓ index
- ✓ slicing

String – in Python are arrays of bytes representing Unicode characters. A string is a collection of one or more characters put in a single quote, double-quote, or triple-quote.

Example:
x = 'a'
y = "python"
z = "Hello world"

List – It is an ordered collection of similar or different Python data types

Example:
a = []
b = [1,2,3,4]
c = list()
d = list([1,2,3,'hello','python', True, False])

Tuple – Just like a list, a tuple is also an ordered collection of Python objects. The only difference between a tuple and a list is that tuples are **immutable** that means tuples cannot be modified after it is created

Example:
a = ()
b = (1,2,3,4)
c = tuple()
d = tuple([1,2,3])
e = tuple([1,2,3,'hello','python', True, False])

➔ **Let's Practice**

Boolean Data Type

Boolean data type has one of the two built-in values, either True or False

Example:
a = True
b = False

Note: Non-Boolean objects can be evaluated in a Boolean context as well and determined to be true or false

Set Data Type

A Set is an unordered collection of data types which is mutable, iterable and has no duplicate elements. The order of elements in a set is undefined or not guaranteed.

Example:
a = set()
b = set("Python")
c = set([1,2,3,4])
d = set([1,2,3,'hello','python', True, False])
d = {1,2,3,'hello','python', True, False}

Dictionary Data Type

A dictionary in Python is an unordered collection of data values, used to store data values as key value pairs. Key & value is separated by colon (:) whereas each key value pair is separated by comma (,). The order of key value pairs is not guaranteed (till 3.6/3.7 version) to overcome we have orderedDict.

Example:
a = dict()
b = dict({1:"hello"})
c = {}
d = {1:"hello", 2:"python"}

➔ **Lets Practice**

Recap

➢   What is variable & how to declare them
➢   Variables are dynamic type in python
➢   Different data types classification in python
➢   Learned & practiced the couple of data types
➢   Learned the differences between the ordered & unordered collections and usage of them

Assignment