Data Types

Data Types

- Data types are means to indentify type of data and set of valid operations for it.
- Python offers following built-in core data types:
  1. Numbers
  2. Strings
  3. List
  4. Tuples
  5. Dictionary

Data Types

(i) Data types for number

- Python offers following data types to store and process different types of numeric data:

(a) Integers

i. *Integers (signed)*

ii. *Booleans*

(b) Floating-point numbers

(c) Complex numbers

Data Types

(a) Integers.

There are two types of integers in python:

(i) Integers (signed).

- It is the normal integer representation of whole numbers.

(ii) Booleans.

- These represent the truth values false and true.

(b) Floating point numbers.

- floating point numbers represent machine-level double precision floating point numbers (15 digit precision).

Data Types

(c) Complex numbers.

- Python represent complex numbers in the form A + B j.
- Complex number are a composite quantity made of two parts:

  The Real part and the Imaginary Part

NOTE : Python represents Complex numbers as a pair of floating point numbers

The Range of Python Numbers

Data Type	Range
Integers	An unlimited range, subject to available (virtual) memory only
Booleans	Two values True (1), False (0)
Floating point numbers	An unlimited range, subject to available (virtual) memory on underlying machine architecture
Complex numbers	Same as floating point numbers because the real and imaginary parts are represented as floats

Data type for strings

- All strings in python is equals of pure Unicode characters.
- Unicode is a system designed to the present every character from every language.

NOTE : Valid string indices are 0, 1, 2…upto length-1 in forward direction and -1, -2, -3…-length in backward direction

015 STRING DATA TYPE

```
a,b,c,d="abcd", "1234", "$%^&", "????"
print(a)
print(b)
print(c)
print(d)
```

Data Types

Lists

- A list in python represent group of separated values of any data type between square brackets.
- In list two the values internally are numerals from zero on words

016 LIST

```
a=[1,2,3,4,5]
b=['a','e','i','o','u']
c=['neha,102,79.5']
print(a)
print(b)
print(c)
```

Data Types

Tuples

- Tuples are represented as group of, separated value of any day time within parentheses

017 TUPLES

```
p=(1,2,3,4,5)
q=(2,4,6,8)
r=('a','e','i','o','u')
h=(7,8,9,'A','B','C')
print(p)
print(q)
print(r)
print(h)
```

Data Types

Set

- A set mutable data type which is created like lists, but with { }.
- It can take values of different types but cannot contain mutable elements and duplicate entries

018 SET

```
set1={1,2,3,4}
set2={'a','b','c','d'}
set3={"Mayank","Vaibhav","Shradha"}
print(set1)
print(set2)
print(set3)
```

Data Types

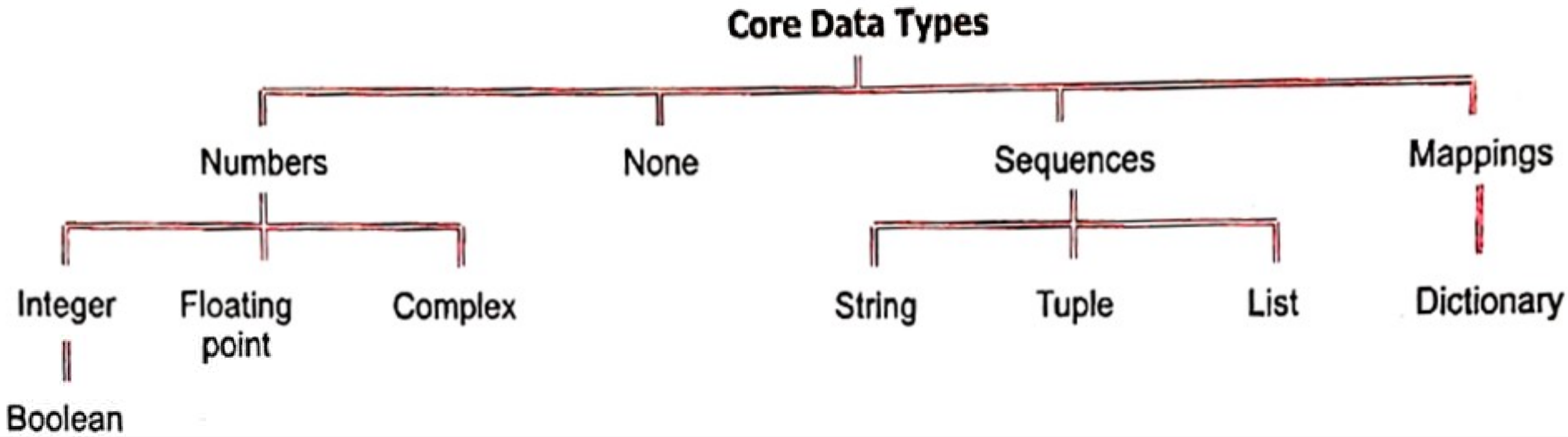
Dictionaries

- The dictionary is an unordered set of comma-separated key : value pairs, within { }, with the requirements that within a dictionary,
- For instance, following are some dictionaries:

019 DICTIONORIES

```
vowel={'a':1,'e':2,'i':3,'o':4,'u':5}
print('a')
print('e')
print('i')
print('o')
print('u')
```

Following Figure Summarizes The Core Data Type Of Python.



PYTHON TEST – 1.6
DATA TYPES