Python Variables
Python Datatypes

Python4All
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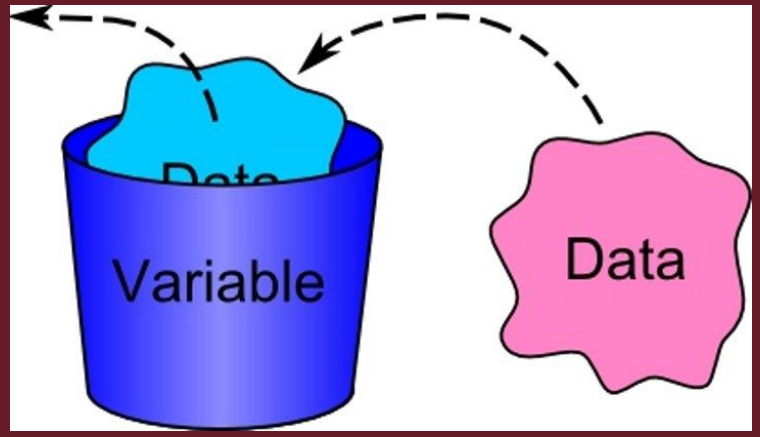
https://github.com/bachinaram/python4all

Python Variables

- What is a variable
- Variable naming convention
- Single variable assignment
- Multiple variable assignment
- Local and Global variables
- Global Keyword
- Conversion function

What is a variable

- Reserved location in memory to store data
- Python takes care of creating memory when variable is created



Variable naming convention

- Variable name cannot start with number.
- Variable name can start with letter or underscore character
  - A-Z, a-z,_ but cannot start with number or other characters
- Variable name can contain alphanumeric and underscore
  - A-Z,a-z,0-9,_
- Variable are case sensitive
  - MyNumer = 10 is not same as mynumber = 30

Single variable assignment & Mulitple variable assignment

- my_first_var=12
- a=b=c=12
- Var1,var2,var3='we','have','three variables'

Python Local variable vs global variable

- Local variable are declared inside the function cannot be used outside of function.
- Global variables are declared outside the function, we can use the global variable even inside the function.

Global keyword

- All function variables are local by default
- We don’t have to use global keyword when variable is out the functions
- We can only read the global variable inside the function but cannot change the value, to do that we have to define global keyword to variable.

Type conversion functions

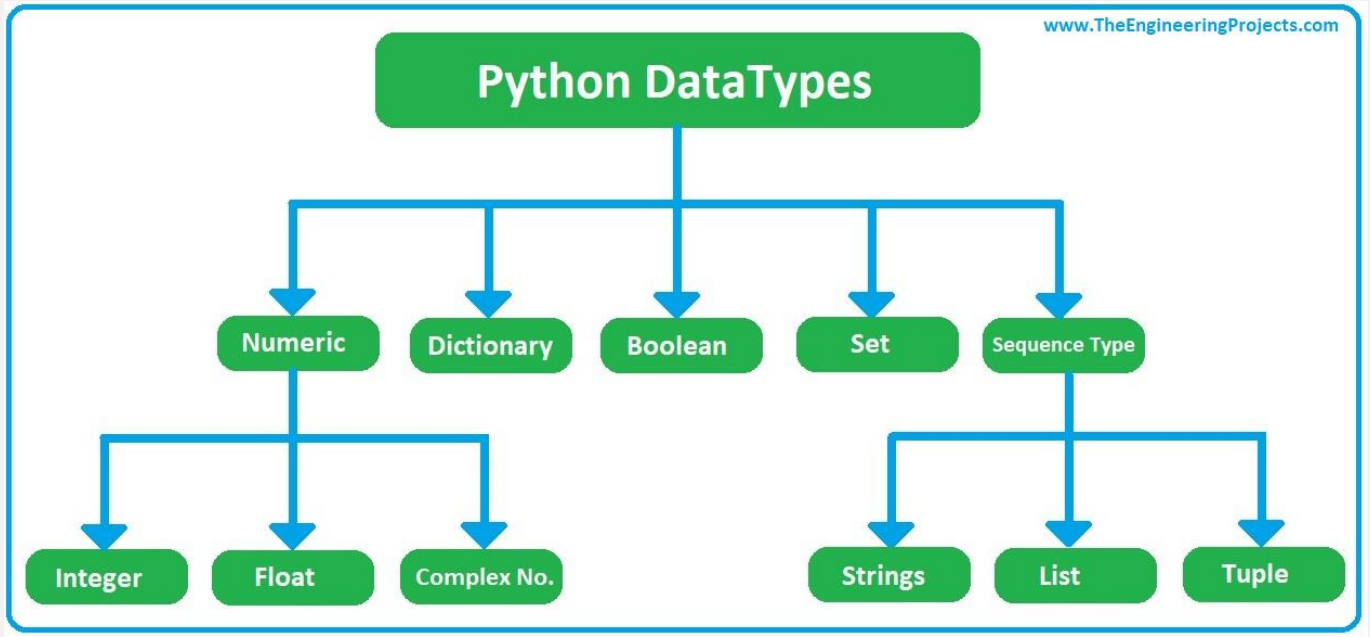
Convert one data type to another data type

Types

- Implicit type conversion
  - Interpreter automatically converts without user involvement
- Explicit type conversion
  - User/developer converts from one datatype to other using default python functions

Python Datatypes

1. Python has built-in data types
   - Boolean
   - Mapping - dict
   - Text – string
   - Sequence
     - List, tuple, range
   - set
   - Numeric
     - Int, float, complex
2. Variable holds data
3. Variable is categorized based on datatype
4. We don’t have to specify datatype in python as a part of variable declaration.
5. Python datatype doesn't have max size we give large data till our memory can hold.



Numeric datatypes

Int –

- All whole numbers fall under integer e.g., -2,-1,0,1,2,..
- Max size of integer depends on the size of memory

Float –

- Floating point numbers are decimal numbers
- It includes both positive and negative e.g., -2.234,0.4356,1.1234445
- Decimal value is accurate upto 15 digits

Complex -

- Used in electricty applications
- Complex number contains real and imaginary number
- e.g., 10+2j

Boolean datatype

Boolean is defined by keywords True or False

If int, float, complex variables value as 0 then bool type function always retuns False

If int, float, complex variables value as positive/negative then bool type function always retuns True

Sequence datatype

- List -
  - Using single variable name we can store multiple/collection of data with different datatypes
  - It allows duplicate values
  - Any datatype combination can be placed inside the list
  - List is changeable (can add , modify and delete values from list)
- Tuple -
  - Tuple has all properties of list except tuple has immutability feature.

Sequence Datatype

- String –
  - A sequence of characters
- String content is placed between single or double quotes
- Machine memory is your maximum size of the string variable

references

- https://kevinavignon.com/2014/11/18/programming-basics-variables/
- https://www.theengineeringprojects.com/2020/06/how-to-use-data-types-in-python.html