

# Python Notes

©Dhiren K. Meshvaniya (PGT-COMP, KV Lunding)

## Chapter 1 : Review of Python Basics

### Introduction

- Python is a programming language
- It is high level programming language
- Used for desktop applications and web applications
- Modern and powerful
- It is interpreted language (executed statement by statement)

### IDLE

- Integrated Development and Learning Environment
- It is a program
- Used to create python programs and execute
- Modes
  - Interactive mode/Python Shell Mode
    - Can write and run One statement at a time
  - Script mode
    - Can write multiple statements
    - Created a file
    - Python script file: **.py** extension
    - Can start from python shell menu File>New or with Ctrl+N
    - Need to save before run
    - Can run from menu or with F5.

### Variables & Datatypes

- Variable is used to store some values
- One value can be stored at a time
- The type of value defines the datatype of variable
- The value stored in a variable can be changed
- Variable is created in primary memory (RAM)
- Components of variable:
  - Value: any number, character or string that is hold by variable
  - Identity: The address of memory location where the variable is created
  - Type:
    - The type of value stored in variable.
    - We don't need to specify the type.
    - It is automatically defined.
    - Known as datatype.

#### 1. Numerica Data types

- Integer, Boolean: Decimal digits without floating point. Boolean is only 0 or 1 as False and True.
- Float: decimal digits with floating points
- Complex: pair of real and imaginary numbers. Formatted as a+bj.

#### 2. Sequence

- String: collection of characters. Defined with single/double quotes.
- List:
  - i. collection of values with index numbers.
  - ii. Defined with [ ] brackets

- iii. Can be changes: Mutable
- Tuple:
  - i. collection of values with index numbers.
  - ii. Defined with ( ) parenthesis
  - iii. Can NOT be changed once created: immutable.
- 3. Mapping
  - Dictionary
    - i. Collection of key-value pairs
    - ii. Defined with { } braces
- 4. Sets
  - Collection of values of any type
  - NO duplicate
  - immutable
- 5. None
  - Special data type
  - Absence of value

### Keywords

- Reserved words of python programming
- Each keyword has specific meaning(command)
- They can not be used as variable names and function names
- Print(keyword.kwlist)
- All are small case except False, None, True (value keywords)

### Operators and operands

- Each operator has specific operation purpose
- They are symbols
- They work with values, called operands
  - i. Arithmetic
  - ii. Assignment
  - iii. Relational/Comparison
  - iv. Logical
  - v. Identity
  - vi. Bitwise
  - vii. Membership

- **Arimetical Operators**

+ (Binary)	Addition
- (Binary)	Subtraction
+ (Unary)	Positive
- (Unary)	Negative
*	Multiplicaiton
/	Division
//	Floor division. Integer part of quotient
%	Remainder
**	Exponent/Power

- **Assignment Operators**

=	Assign R-value to L-value
+=	Evaluate R-value and add to L-Value
-=	Evaluate R-value and subtract from L-Value
*=	Evaluate R-value and multiply to L-Value

/=	Evaluate R-value and divide to L-Value
%=	L-value/R-value and The remainder is assigned to L-value
//=	L-value/R-value and The integer part is assigned to L-value
**=	L-value**R-value and the result assigned to L-value

- **Relational Operators**

==	Equality. True if both values are equal.
!=	Inequality: True if both values are NOT equal
<	True: if left value is smaller
>	True: if right value is smaller
<=	True: if left value is smaller or equal
>=	True: if right value is smaller or equal

- **Logical Operator**

AND	True: if both side are true. False: If any/both side is false.
OR	True: If any or both side are True False: if both side are false
NOT	Return True for False Return False for True

### Input Output

1. Input()
  - a. Accepts input from user
  - b. Input as string
  - c. Prompt message can be passed as parameter
  - d. Syntax: var=input(<message>)
2. print()
  - a. used to display some output on screen.
  - b. Can accept string or numerical data to display
  - c. By default, it given new line after printing.
  - d. Default new line can be changed with 'end' parameter.

### Other Basic Functions

1. eval()
  - a. Accepts mathematical expression as string
  - b. Evaluates expression and return the final result
  - c. Ex: eval("12+5\*3")=> 27.
2. Int() Converts string, float, Boolean to integer
3. Float() Converts string, integer, Boolean to float
4. Bool() Converts integer to Boolean

### Comments

- Comments are the statements which are ignored by interpreter
- It is not executed
- Comments are used for documentation. Documentation means writing explanation of program within code.
- Single line: written with starting with '#'
- Multiline: written by starting and ending with triple quotes ('')
- Comments are not the part of program Logic.