DAY 2
Variable & basic data types
in Python

Understanding the python and programming

PART I. What is variable?

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About your Instructor

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Course Objectives of Part I

LET’S print out the ‘HELLO WORLD’ and UNDERSTAND how it works

1. Understanding what is variable
2. Understanding the basic data types

Variable declaration & Value Assignment

assignment operator & comparison operator

- =
  - ‘=‘ means assigning the value from right to left
- ==
  - ‘==‘ means that the value of LHS and RHS is equivalent

Comment

Making comment on your code

- Code that starts w/ # does not compile and run in the program
- When the Python Interpreter meets ‘#’, it ignores and skips to the next line
- It’s used for human user, since the code would be in need to be examined and modified

Print function

Output to your screen

- **What is function?**
  - Function means the code block that could be repeatedly used for specific usage
- **Print function**
  - Out-stream of the variable's value
  - By using comma "," in parentheses of print function, it would be printed out in one line
  - Basically, one space is printed out between each arranged variables in parentheses

Print function settings

Basic settings

- Use the following settings
  - sep : Separator between each variables in parentheses
  - end: String to print out at last

Exercise : Check your values in variables

Use print function

- 1. Assign the value 365 to 'x', assign the value 128 to 'y' and assign the value 237 to 'z'
- 2. Print out x, y in same line with separator '-' and print out '=' using the 'end' setting
- 3. Print out z

Variable naming rules

(Optional for now)

- Use any english characters @ start
- Using numbers and underscore(_) is possible

- However using the number at the start of the variable name is not possible
- Giving the simple and accurate name for variable should be done for later usages

Reserved Keywords

Keywords that can’t be used as variable names

- for
- while
- if
- elif
- else
- class
- try
- except
- class

… and many more~~

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PART II. Basic Data types

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Course Objectives of Part II

LET’S print out the ‘HELLO WORLD’ and UNDERSTAND how it works

1. Understanding what is variable
2. Understanding the basic data types

Basic data types

Integer, floating point numbers, string, boolean types

- type function
  - Use type function if you want to know the variable’s type
- None
  - Use it to assign nothing
  - Make the variable to have no initial value, when declared
  - In other languages (C, C++, Java or so), NULL or nil are used as same meaning

Comparison operator

Comparing the values

- <, > (RHS is bigger, LHS is smaller / RHS is smaller, LHS is bigger)
- <=, >= (RHS is bigger or equivalent, LHS is smaller or equivalent / RHS is smaller or equivalent, LHS is bigger or equivalent)
- == (Equivalent, Use ‘==‘ for comparing whether it’s equivalent : this is different from ‘=‘ as mentioned in part I)
- != (Not equivalent)

- Returns boolean type result

Numbers type

Int, Floating point numbers

- Integer and Floating point numbers are the numbers type
  - 12 and 12.0 are different
- Basic mathematical operators are all available:
  - addition
  - subtraction
  - remainder
  - division
  - multiplication

Operation priorities

Same as math

- To prioritize the later ordered operator, use parentheses.
- It’s basically equivalent to mathematical operator priorities

Exercises

Q. Calculate the following, by using python program and print out

- 5 * 3
- 12 * 98
- 12.1 * 12.1
- 83 - 12
- 96 % 12 (remainder after dividing 96 by 12 when they are integers)
- 96.0 / 12.0 (quotient of division 96 / 12 in floating point number)
- 37 + 122
- 177 * 2 + 36

String type

Multiple characters arranged as some sequence

- String is created by putting in some characters between ‘ (Single quote) or “ (Double quote)
- If the String has ‘ or “ itself, then use different “ or ‘ to recognize it as a character
- Multiple lines of characters as strings
  - use “”” “””
  - or ‘’’ ‘’’

String type - Escape sequence

Giving specific effect

- \n : new line

- \t : tab

Indexing and Slicing

(Optional for now)

- Characters in the string has their own sequences.
- Order of the sequence is given as the index
- Starts with zero and increases

Indexing and Slicing

Index range and slicing

- **(Example)**
- 11 characters long string
  - indexed from 0 to 10
- Hence Index is in the range of {0, length), which means it starts from 0 and goes to length - 1
- If it exceeds the range of the index, it returns the error messages
- **(OPTIONAL)**
  - -1 index

Slicing

OPTIONAL TOPIC but necessary, so please check individually

- ***Please check the additional appendix .ipynb jupyter notebook file since it would take some time to explain and understand.***
- ***Ask questions about this one on real-time online classes***

Exercises

Q. What is the index of the given string?

- ‘ABCD’ : What is the index of the character ‘C’?

- ‘ABC_HIJ’ : What is the length of this string and what is the range of index for this string?