Introduction to Python

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The key to growth is the introduction of higher dimensions of consciousness into awareness.

Lao Tzu

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What is Python?

Python is an interpreted high-level **general-purpose** programming language.

Python Implementations:

1. Software Development
2. Web Development
3. Data Science
4. Data Engineering

https://www.python.org/about/success/

Why Python?

1. Great libraries to deal with data science application.
2. Simple syntax.
3. Huge community.
   a) http://www.pythonware.com/daily/
   b) http://planet.python.org/
   c) http://showmedo.com/videotutorials/python
4. General-purpose (Web Development, Data, Software Development)

Python Usage in Data Science

Python has hundreds libraries that can support the Data Science process, thus it saves a lot of time on development or exploration process.

Some of these libraries are given below:

1. Pandas
2. Numpy
3. Scipy
4. Scikit Learn

Jupyter Notebook

A Jupyter Notebook is a browser-based REPL containing an ordered list of input/output cells which can contain code, text (using Markdown), plots and rich media.

Download Link: https://www.anaconda.com/products/individual

Variables, Data Types, Assignment & Comments

Variables are used to store any value or data.

Rules for creating variables in Python:

- Start with a letter or the underscore character.
- Can’t start with a number.
- Only contain alpha-numeric characters and underscores (A-z, 0-9, and _).
- Variable names are case-sensitive (name, Name and NAME are three different variables).

Variables, Data Types, Assignment & Comments

int = ... -2, -1, 0, 1, 2, ...

float = 1.0, 1.5, 2.3

string = “Hello”, ‘World’, “1”

boolean = True, False

list = [1, 2, “Hello”]

set = {‘g', 's', 'e', 'o', 'r', ‘f', 'k'}

tuple = (‘g', 'e', 'e', 'k', 's')

dictionaries = {“name”: “Digital Skola”, “code”: “python”}

Arithmetic Programming

We can remember the order using PEMDAS: Parentheses, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

Arithmetic Programming

Operator	Name	Example
+	Addition	3 + 4 = 7
-	Subtraction	5 - 3 = 2
*	Multiplication	2 * 3 = 6
/	Division	6 / 2 = 3
%	Modulus	5 % 2 = 1
**	Exponent	3 ** 2 = 9
//	Floor Division	10 // 4 = 2

Assignment Operator

Operator	Name	Equals to
=	X = 5	X = 5
+=	X += 3	X = X + 3
-=	X -= 2	X = X - 2
*=	X *= 5	X = X * 5
/=	X /= 2	X = X / 2
%=	X %= 5	X = X % 5
**=	X **= 2	X = X ** 2
//=	X //= 2	X = X // 2

Whitespace & Indentation

In Python, space and tab are recognized as whitespace. Implementation of whitespace improves readability of code.

x=1+5

Is equals to

x = 1 + 5

Is equals to

x = 1 + 5

Whitespace & Indentation

When python an assignment is too long in a line, coders can use backslash (‘\’) to make it possible to continue the code in a new line.

```
s3 = x + x**2/2 + x**3/3 \
     + x**4/4 + x**5/5 \
     + x**6/6 + x**7/7 \
     + x**8/8
```

Whitespace & Indentation

Indentation is the leading whitespace (spaces and tabs) before any statement in python. Indentation in other languages is just for readability, but in python, the indentation is a mandatory concept that should be followed when writing a python code, otherwise, IndentationError is thrown by the python interpreter.

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Thank YOU