Linux Beginner Guide

Jaewoong Lee

Ulsan National Institute of Science and Technology

jwlee230@unist.ac.kr

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Introduction

In this guide, I assume that followings are already installed:

1. Ubuntu 16.04.2 or Higher
2. ZSH 5.0.2 or Higher
3. VIM 8.1 or Higher
4. Python 3
5. We will connect to server via SSH

Also, you should be familiar with Linux system.
If not so, you should start at here:
`https://github.com/Fumire/LinuxLecture/releases/tag/200105`

Overview

Python?

Figure: Logo of Python

Python is an *interpreted* programming language, created by Guido van Rossum in 1991.

Interpreted?

Interpreted is opposed *compiled*.
Complied programming language is required compiling(translating) before its running.
Interpreted programming language does not require compiling; it can run by read code one-by-one line.

How to run Python?

There are two ways to run Python

```
05:11:35 jwlee230@darwin ~/python
$ python
Python 3.7.4 (default, Jan 15 2020, 11:36:18)
[GCC 5.4.0 20160609] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> import this
The Zen of Python, by Tim Peters
```

(a) Python Interpreter

```
05:15:48 jwlee230@darwin ~/python
$ python3 test.py
The Zen of Python, by Tim Peters
```

(b) Python Script

We will prefer (b) Python Script for better reproducibility.

print()

Example

print("Hello world")

This example will print as:

Example

Hello world

Try with other strings!

input()

Example

```
s = input("Write:")
print(s)
```

input() accepts input as string.
Also, in this example, *variable* is used; we will talk about that later.

int Type

int type means integer. You can obviously use integers in Python.

Example

```
print(123)
print(-321)
print(0)
```

Also, you can use octal and hexadecimal integers as:

Example

```
print(0o123)
print(0xABC)
```

float Type

float type means decimals.

Example

```
print(1.23)
print(-.3.21)
```

Also, you can express decimals as:

Example

```
print(1.23e45)
print(6.78E-9)
```

Those mean 1.23×10^{45} and 6.78×10^{-9}, respectively.

Arithmetic Operators

You might know how to express arithmetic operators in programming.

Example

```
print(3 + 4)
print(3 - 4)
print(3 * 4)
print(3 / 4)
```

is equivalent with

Example

$3 + 4$

3 - 4

3×4

$3 \div 4$

Power Operator

There is power operator in Python.

Example

```
print(3 ** 4)
```

will return as

Example

$3^4 = 81$

Remainder Operator

The '%' operator results remainder.

Example

```
print(15 % 4)
```

The example will print '3'.

Quotient Operator

The '//' opertor results quotient.

Example

```
print(15 / 4) print(15 // 4)
```

Compare the difference of above example.

List Type

List type contains other data as *list*.
You can declare list as following:

Example

nameOfList = [element1, element2, element3, ...]

Here is an example of list:

Example

```
a = [] #empty list
b = [1, 2, 3]
c = [1, [2, 3], 4] # list in the list
```

Indexing

Note that Python counts number *from zero*.
Thus, there are n indices from zero to $n-1$ in the list which length is n.

Example

```
a = [5, 6, 7]
print(a[0], a[1], a[2]) # a[3] will occur error!
```

You can access each element as the example.

Slicing