Lesson 1 Python Introduction and Installation

1. Object Oriented Introduction

Python is a object oriented programming language. Object Oriented is a method of software development and a programming paradigm. Difference between Object Oriented and Procedure Oriented is as follow.

Software Development Method	Programming Idea
Procedure Oriented	Focus on procedure, analyze the steps to solve problems and implement the steps sequentially with functions.
Object Oriented	Focus on object, decompose things that make up the problem into several objects and describe the behavior of an object in the overall solution.

2. Python Introduction

First released in 1991, Python is a cross-platform programming language. And it gets its name from comedy troupe Monty Python preferred by its developer.

Python provides ample API (Application Programming Interface) and tools, which enables the programmer to write extension modules in C, C++ and Cython. In addition, Python compiler can also be integrated into the program

which requires scripting language, so it is frequently used to integrate and package the program written in other languages.

Thanks to its syntax, dynamic typing and nature of interpreted language, Python is the programming language adopted by most platforms to write script and develop application. As the version keeps updating and new functions are added, Python is gradually applied in the development of independent and large-scale project.

Note: Python2.0 is no longer maintained by the official since 2020, so it is recommended to use Python3.0 or above.

3. Python Feature

1）Easy to master: Python has small amount of keywords, simple structure and clear syntax definition.

2）Easy to read and maintain: the definition of Python code is distinct and it is easy to maintain the source code.

3）Fast running: base layer, multiple standard libraries and the third-party libraries are written in C, which attributes to fast running.

4）Free and open-source

5）Abundant libraries: Python comes with large standard library which can handle various tasks, including regular expressions, documentation generation, unit testing, threading, databases, web browsers, CGI, FTP, and other system-related operations.

6）Transplantable: as Python is open-source, it can be transplanted to various platforms, such as Linux and Windows.

4. Python Installation

Note: the following operations are based on Ubuntu18.04. As Ubuntu18.04 comes with Python 3.6.9, users who use this system can skip Python installation.

Before installing Python, install virtual machine for system configuration. For specific instructions, please refers to the file in "**2. Linux Basic Lesson->Lesson 2 Environment Configuration in Windows and Lesson 3 Linux Installation and Source Replacement**".

1）Install Python with Ubuntu official apt tool package.

Note: please strictly distinguish lower case and upper case, and keywords can be complemented by "Tab" key.

2）Start virtual machine, and click 🎲, and then click 💻 or press "**Ctrl+Alt+T**" to open command line terminal.

3）Take installing python3.8 for example. Input command "**sudo apt-get install python3.8**" command, and then input the password and press Enter to install.

```
hiwonder@ubuntu:~$ sudo apt-get install python3.8
```

4）If the prompt about whether to continue execution, please input "**Y**" and press Enter. If no error is reported, it means that Python3.8 is installed successfully.

```
Need to get 4,542 kB of archives.
After this operation, 18.4 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
```
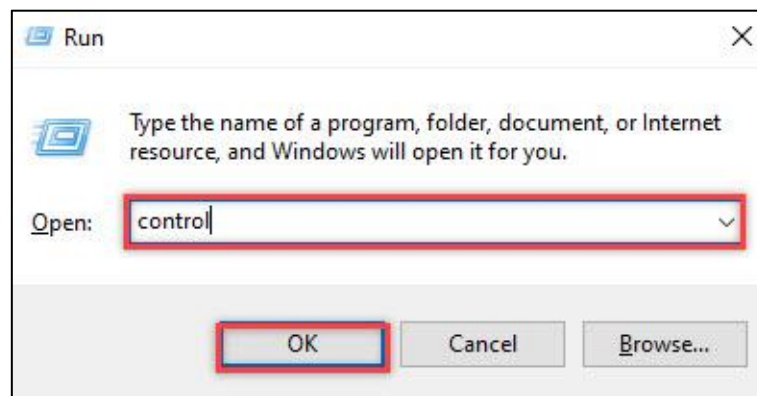
5）Input "**python3.8 -V**" command and press Enter to check whether the version is Python3.8.

```
ubuntu@ubuntu-virtual-machine:~$ python3.8 -V
Python 3.8.0
```
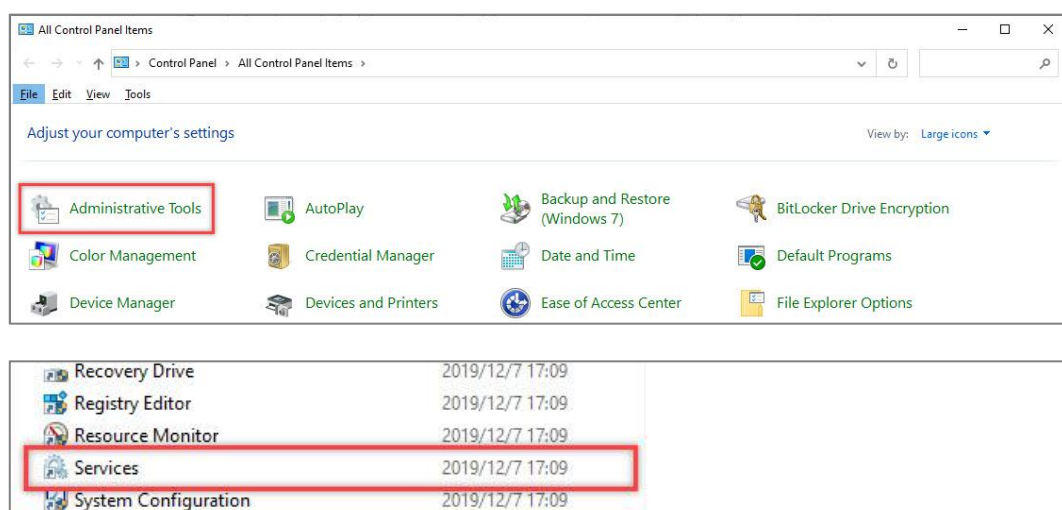
5. Solution for Installation Failure

◆ **Enable VMware-related service on computer**

1）Switch to your computer system, and press shortcut "**WIN+R**" to open Run box. Then type "**control**" and press "**Enter**" to open control panel.
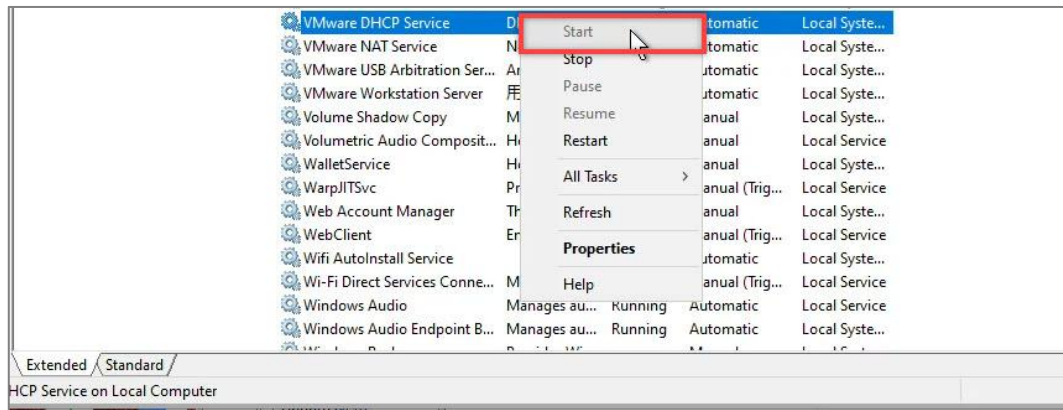

2）Click "**Administrative Tools**" to enter the panel, and then double click "**service**".

3）Find the following VMware-related services.

4）Right click and select "**Start**" to start all VMware-related services.

◆ **Install GCC compiler**

1）Start virtual machine, and click , and then click or press "**Ctrl+Alt+T**" to open command line terminal.

2）Input "**sudo apt-get update**" command and press Enter to obtain GCC compiler.

3）Input "**sudo apt-get install gcc**" command and press Enter to install GCC compiler.

4）If the prompt about whether to continue execution, please input "**Y**" and press Enter.