Python Module Search Path

Summary: in this tutorial, you'll learn how the module search path works in Python when you import a module into a program.

Introduction to Python module search path

When you import a module (https://www.pythontutorial.net/python-basics/python-module/) in a program:

```
import module
```

Python will search for the `module.py` file from the following sources:

- The current folder from which the program executes.
- A list of folders specified in the PYTHONPATH (https://docs.python.org/3/using/cmdline.html#envvar-PYTHONPATH) environment variable, if you set it before.
- An installation-dependent list of folders that you configured when you installed Python.

Python stores the resulting search path in the `sys.path` variable that comes from the `sys` module.

The following program shows the current module search path:

```
import sys

for path in sys.path:
    print(path)
```

Here's a sample output on Windows:

```
D:\Python\
C:\Program Files\Python38\python38.zip
C:\Program Files\Python38\DLLs
C:\Program Files\Python38\lib
C:\Program Files\Python38
C:\Users\PythonTutorial\AppData\Roaming\Python\Python38\site-packages
C:\Program Files\Python38\lib\site-packages
```

And the following is the sample output on Linux:

```
/Library/Frameworks/Python.framework/Versions/3.8/bin
/Library/Frameworks/Python.framework/Versions/3.8/lib/python38.zip
/Library/Frameworks/Python.framework/Versions/3.8/lib/python3.8
/Library/Frameworks/Python.framework/Versions/3.8/lib/python3.8/lib-dynload
/Library/Frameworks/Python.framework/Versions/3.7/lib/python3.8/site-packages
```

To make sure Python can always find the `module.py`, you need to:

- Place `module.py` in the folder where the program will execute.
- Include the folder that contains the `module.py` in the `PYTHONPATH` environment variable. Or you can place the `module.py` in one of the folders included in the `PYTHONPATH` variable.
- Place the `module.py` in one of the installation-dependent folders.

Modifying the Python module search path at runtime

Python allows you to modify the module search path at runtime by modifying the `sys.path` variable. This allows you to store module files in any folder of your choice.

Since the `sys.path` is a list, you can append a search-path to it.

The following example adds the `d:\modules` to the search path and use the `recruitment` module stored in this folder:

```
>>> import sys
>>> sys.path.append('d:\\modules\\')
>>> import recruitment
>>> recruitment.hire()
Hire a new employee...
```

Summary

- When you import a module, Python will search for the module file from the folders specified in the `sys.path` variable.
- Python allows you to modify the module search path by changing, adding, and removing elements from the `sys.path` variable.