Directory

Python Directory

A directory or folder is a collection of files and subdirectories.

If there are a large number of files to handle in your Python program, you can arrange your code within different directories to make things more manageable.

Python has the `os` module, which provides us with many useful methods to work with directories (and files as well).

Get Current Directory

We can get the present working directory using the `getcwd()` method defined in the `os` module.

This method returns the current working directory in the form of a string.

```python
import os

current_directory = os.getcwd()
print(current_directory)
```

Output

```
C:\Users\ASUS\Desktop
```

List Directories and Files

All files and subdirectories inside a directory can be known using the `listdir()` method.

This method takes in a path and returns a list of sub directories and files in that path. If no path is specified, it returns from the current working directory.

I have a folder named `test` on my Desktop.

- It contains a folder named `sub`. This folder contains a file `sub.txt`
- The `test` folder also contains two files `test-1.docx` and `test-2.txt`

Now, let's see what `listdir()` returns.

```python
import os

# path to test-directory
folder_path = 'C:\Users\\ASUS\\Desktop\
\test-directory'

result = os.listdir(folder_path)
print(result)

# Output: ['sub', 'test-1.docx',
'test-2.txt']
```

I am using Windows and the location of the `test-directory` folder on my computer is `'C:\Users\ASUS\Desktop\test-directory'`.

Since, `\` is used for escape sequences, we need to use `\\` for backslash.

If you are using a Unix system (Linux or MacOS), you need to use `/`. The `/` can also be used for Windows instead of `\\`.

Create a New Directory

We can make a new directory using the `mkdir()` method.

This method takes in the path of the new directory. If the full path is not specified, the new directory is created in the current working directory.

```
import os

os.mkdir('test')
```

Here, we created a directory named `test` in the current working directory.

Renaming a Directory

The `rename()` method can rename a directory or a file.

The method takes two arguments. The first argument is the old name and the second is the new name.

Suppose, we have a folder named `test` in the current working directory. Let's change its name to `new-test`.

```
import os

os.rename('test', 'new-test')
```

Moving Files/Directories

Previously, we learned to rename a file/folder in the current working directory.

If the folder/file you want to rename is not in the current working directory, you need to specify the full path.

Also, you can change the location where the renamed file/folder is saved by specifying the full path.

The `rename()` method can also be used to move files/directories without renaming it. Here's how.

```
import os

os.rename('test', 'C:/Users/ASUS/Desktop/
test')
```

Here, we didn't change the folder name. We only moved the `test` folder from the current working directory to `C:/Users/ASUS/Desktop`.

Removing Directory or File

A file can be removed (deleted) using the `remove()` method.

Similarly, the `rmdir()` method removes an empty directory.

Let's take an example.

```
>>> import os
>>> os.listdir()
['new_one', 'old.txt']

>>> os.remove('old.txt')
>>> os.listdir()
['new_one']

>>> os.rmdir('new_one')
>>> os.listdir()
[]
```

Here, we imported the `os` module. We used the `os.listdir()` to list all files and directories in the current working directory.

Then, we used `os.remove` to remove the `old.txt` file and `new_one` folder.

Removing Non-Empty Directory

The `os.rmdir()` method can only remove empty directories.

In order to remove a non-empty directory, we can use the `rmtree()` method inside the `shutil` module.

Suppose, we have a folder named `test` in the current empty directories. This folder has a few files and directories inside it. Here's how we can delete this folder.

```
import shutil

# deleting test folder and its content
shutil.rmtree('test')
```

You can also specify the full path if the folder you want to delete is in a different location.