Tutorial

Dealing with text files in Python

To open a file in Python, you use the **open()** function. This function requires at least one argument: the file path. Optionally, you can also specify the mode in which you want to open the file:

```
path = 'myfile.txt'
file = open(path, 'r')
```

In the aforementioned example, the ‘r’ is for reading the file’s content. You can use one of the following three methods to read the line:

```
# read everything at once
content = file.read()

# read lines one by one with a for loop
for line in file:
    print(line)

# or using .readline() multiple times
file.readline() # line 1
file.readline() # line 2
file.readline() # line 3

# read everything line-wise
lines = file.readlines() # it's a list
```

It is important to close the file when you are done with it. Not closing a file can lead to memory leaks and other issues.

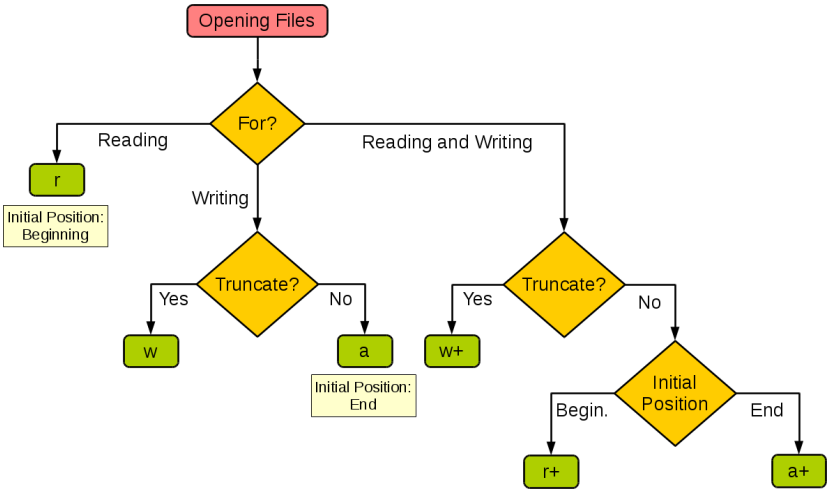
```
path = 'myfile.txt'

file = open(path, 'r')

## do something in the file

file.close()
```

A more Pythonic way to handle files is by using a **with** statement. This ensures that the file is properly closed after its suite finishes, even if an error is raised.

```
1 with open(path, 'r') as file:
2     for line in file:
3         print(line)
```

The reading mode of the **open()** function is not the only one:

- **'r' - Read Mode** *(default)*
  - Opens a file for reading.
  - Error if the file does not exist.
  - Keeps existing content.
- **'w' - Write Mode**
  - Opens a file for writing.
  - Creates the file if it does not exist.
  - !! Deletes any content that the file had !!
- **'a' - Append Mode**
  - Opens a file for appending at the end.
  - Creates the file if it does not exist.
  - Keeps existing content.
- **'r+' - Read and Write Mode**
  - Opens the file for both reading and writing (at the start).
  - Error if the file does not exist.
  - Keeps existing content.
- **'w+' - Write and Read Mode**:
  - Opens the file for both writing and reading.
  - Creates the file if it does not exist.
  - !! Deletes any content that the file had !!
- **'a+' - Append and Read Mode**:
  - Opens the file for both appending and reading.
  - Creates the file if it does not exist.
  - Keeps existing content.



There is also a binary mode which is triggered by appending 'b' to the string such as 'rb', 'wb', 'ab' … It is important for non-text files like images and videos.

As for reading files, there are also multiple methods to **write a specified string to a file**:

```
# One string
with open(path, 'w') as file:
    file.write("Hello\n")

# Multiple strings
with open(path, 'w') as file:
    # the new line is not automatic
    file.writelines(["Hello\n", "World !\n"])
```

When dealing with text files, you can specify the **encoding** during the file opening which is especially important when working with non-ASCII text.

```
with open(path, 'r', encoding='utf-8') as file:
    ## do something
```