Lab Assignment
& Solution

Cybersecurity Professional Program

Introduction to Python
for Security

File System & Error Handling

PY-04-LS5
OS Module & Open Function

Note: Solutions for the instructor are shown inside the green box.

Lab Objective

Understand how to interact with the operating system and perform file operations in Python.

Lab Mission

Save a ***ping*** output to a file with Python's OS module.

Lab Duration

20–40 minutes

Requirements

- Basic knowledge of the OS module
- Familiarity with the ***open()*** function

Resources

- Environment & Tools
    - Windows
        - PyCharm
        - Python3

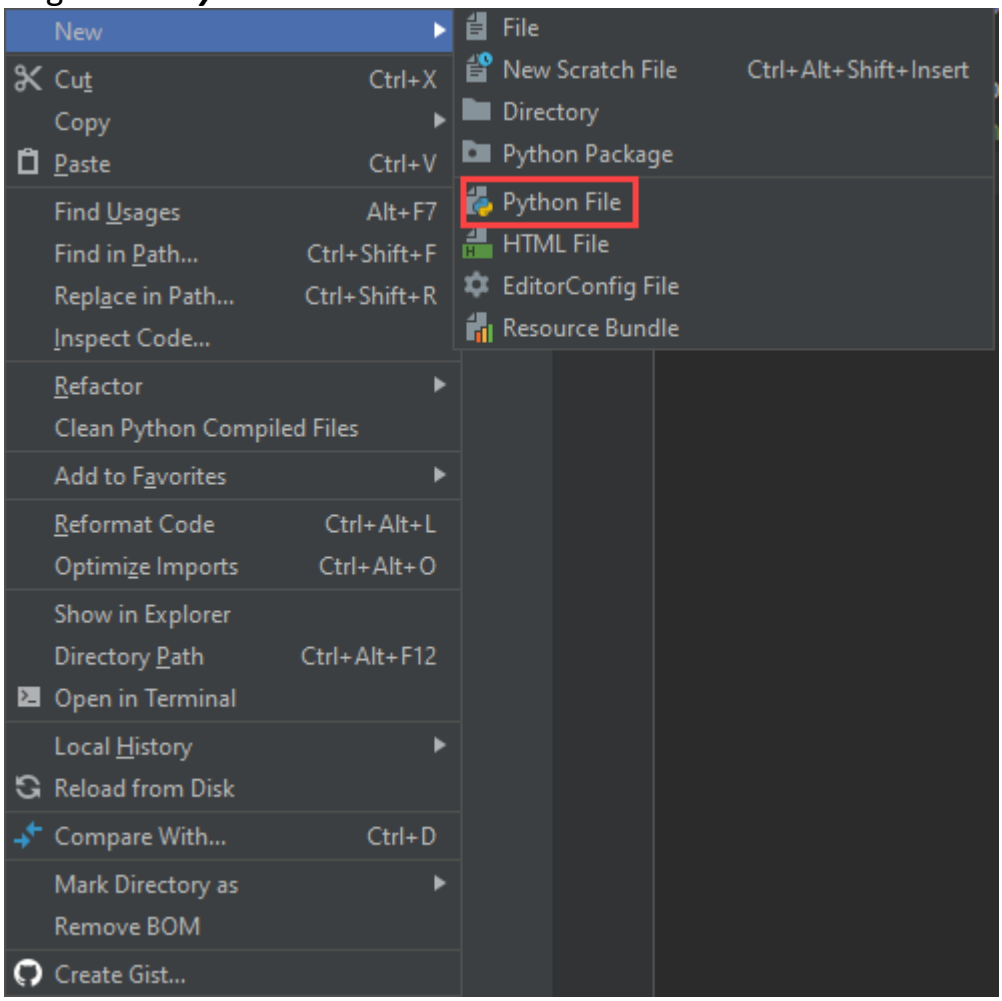
Textbook References

- Chapter 4: File System and Error Handling
    - Section 3: Module Definition and Usage

Lab Task: OS Module & *open()* Function

In this task, you will perform a ping to ***8.8.8.8*** to verify that a network connection exists in the system.

1 Create a new Python file in PyCharm by right-clicking the project you created and selecting **New** > ***Python File***.



2 Create a variable and assign it a filename value provided by the user.

```
file_name = input("Choose a filename: ")
```

3 Import the OS library.

```
import os

file_name = input("Choose a filename: ")
```

4 Use the ***os.system()*** function to ping the public IP address ***8.8.8.8***.

```
import os

file_name = input("Choose a filename: ")
#for mac and linux add -c 4 flag
os.system(r"ping 8.8.8.8")
```

5 Save the results to a new file with the name chosen by the user.
Note: Since the ***os.system()*** function executes commands on the operating system, you need to rely on ***stdout*** operations, such as output redirects, to create and append to a file using the symbol ***>>***. In addition, remember that internet connectivity can be validated by pinging a public IP address.

```
import os

file_name = input("Choose a filename: ")
#for mac and linux add -c 4 flag
os.system(r"ping 8.8.8.8 >> " + file_name + ".txt")
```

6 Use the ***open()*** function to read the file that was created in the previous step.

```
import os

file_name = input("Choose a filename: ")
#for mac and linux add -c 4 flag
os.system(r"ping 8.8.8.8 >> " + file_name + ".txt")
with open(file_name + ".txt","r") as file:
```

7 Create an ***if*** condition to check if the file contains “ms.”

```
import os

file_name = input("Choose a filename: ")
#for mac and linux add -c 4 flag
os.system(r"ping 8.8.8.8 >> " + file_name + ".txt")
with open(file_name + ".txt","r") as file:
    if "ms" in file.read():
```

8 Print a message to inform the user that internet connectivity is available.
Note: Observe the output of the ***ping*** command when an IP address is reachable, as opposed to when it is unreachable. Each outcome will output a string that can be used in the code to create a condition statement.

```
import os

file_name = input("Choose a filename: ")
#for mac and linux add -c 4 flag
os.system(r"ping 8.8.8.8 >> " + file_name + ".txt")
with open(file_name + ".txt","r") as file:
    if "ms" in file.read():
        print("You have an internet connection")
```

9 Add an ***else*** statement to print a message if there is not an internet connection.

```
import os

file_name = input("Choose a filename: ")
#for mac and linux add -c 4 flag
os.system(r"ping 8.8.8.8 >> " + file_name + ".txt")
with open(file_name + ".txt","r") as file:
    if "ms" in file.read():
        print("You have an internet connection")
    else:
        print("You don't have an internet connection")
```

10 Open the file and view the result of the ping.