Lab Assignment
& Solution

Cybersecurity Professional Program

Introduction to Python
for Security

Functions

PY-05-LS6
Recursive Search

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

Lab Objective

Understand how the concept of recursion works and how it can be used in Python.

Lab Mission

Implement the concept of recursion to print values from a nested list.

Lab Duration

15–25 minutes

Requirements

- Basic knowledge of Python
- Working knowledge of functions and lists

Resources

- Environment & Tools
    - Windows, Linux, or macOS
        - PyCharm
        - Python 3

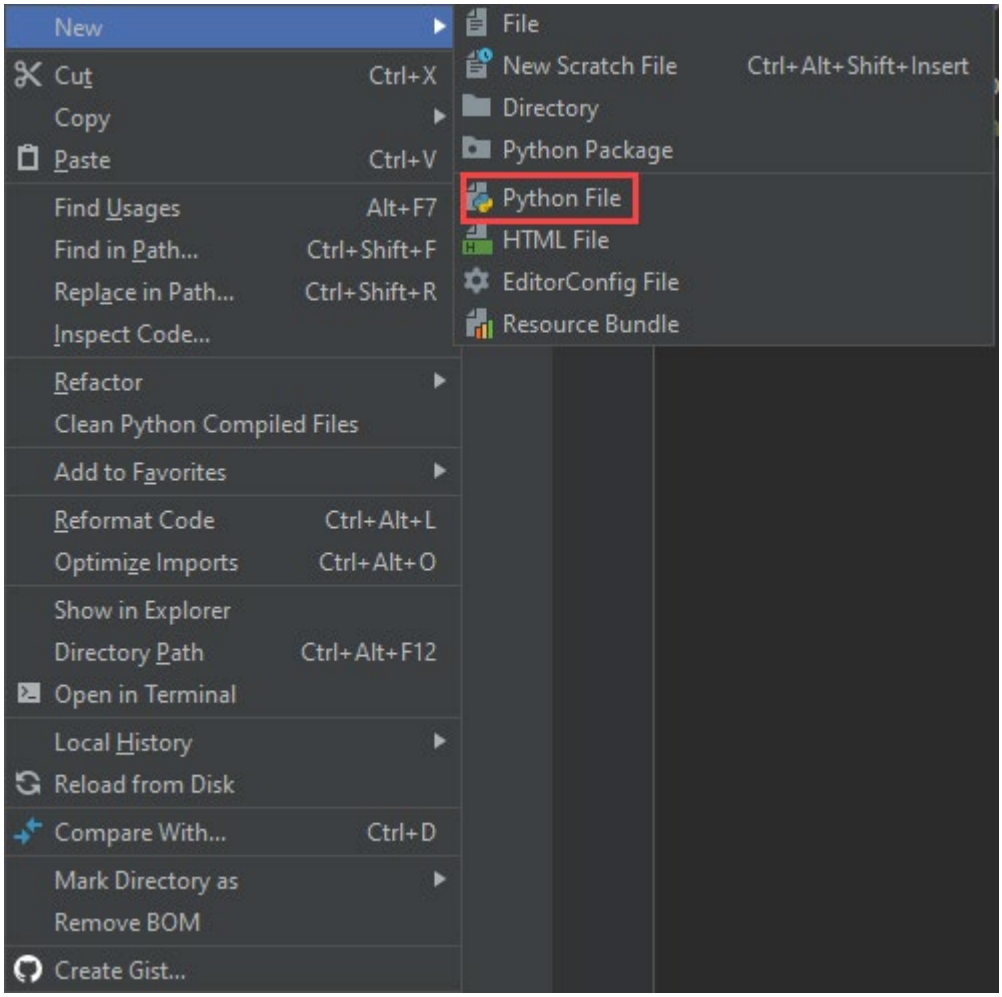
Textbook References

- Chapter 5: Functions
    - Section 3: Recursion

Lab Task: Implementing a Recursive Search

Write a program that identifies items in a list of integers and other data types and prints only numbers within nested lists.

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



2 Create a variable to store the following list:
[1, 2, "a", [4, 5, "b", 6], [7, [8, "d", 9]]]

```
lst = [1, 2, "a", [4, 5, "b", 6], [7, [8, "d", 9]]]
```

3 Create a new function that accepts a parameter.

```
def print_numbers(item_list):
```

4 Create a ***for*** loop to iterate over the accepted parameter.

```
def print_numbers(item_list):
   for item in item_list:
```

5 In the loop, check if the iterated item is an integer, and print it if it is.

```
def print_numbers(item_list):
   for item in item_list:
      if type(item) == int:
         print(item)
```

6 Continue the condition and check if the item is a list. If it is, invoke the function again with the item as the provided parameter.

```
def print_numbers(item_list):
   for item in item_list:
      if type(item) == int:
         print(item)
      elif type(item) == list:
         print_numbers(item)
```

7 Invoke the function to run the program.

```
print_numbers(lst)
```